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SPONDYLOLISTHESIS AS AN ETIOLOGIC FACTOR IN BACKACHE

HENRY W. MEYERDING, M.D.

ROCHESTER, MINN.

Spondylolisthesis may be defined as subluxation of a vertebra, usually forward, and most commonly in the lumbosacral region, where it may produce narrowing of the pelvis. Backache is its most common symptom and forward and downward displacement of the lumbar spine its most common deformity. Recognized in 1853 by Killian as a clinical entity, spondylolisthesis was considered a rare condition and one that most commonly affected women. I am convinced that this deformity has escaped the attention of the general profession and that it will become an increasing factor in solving the problem of the relief of chronic backache.

In my experience males are afflicted in the majority of cases, which is contrary to the earlier teachings. I believe that trauma and congenital defects are the important etiologic factors in spondylolisthesis and that obesity, occupational strain and pregnancy may aggravate or produce the symptoms and increase the deformity. Old injuries, sustained months or years previously, may be the (unrecognized) factors which have produced the subluxation, but the most important factors are congenital anomalies which result in weakness in the lumbosacral region.

General practitioners are often called on to fix responsibility for, and to estimate the duration and degree of, such disability. On relief of symptoms they are in a position to return the patient to his occupation and to adjust a fair rate of compensation. In venturing an opinion in cases in which compensation is sought for disability due to chronic backache following overlifting or back injuries, and in cases in which malingering must be considered, I would remind them of the following statement I made before the American Orthopaedic Association in 1931: Pain in the lower part of the back, which is relieved by rest, aggravated by work and associated with industrial injury, suggests the possibility of "railroad spine," traumatic neurosis, and so on, yet these disorders are commonly complained of by patients with spondylolisthesis whose appearance is often apparently normal and who seem to be enjoying undeserved benefits. While in my experience in the neighborhood of only 7 per cent of such cases have been diagnosed previously, present knowledge of the deformity makes it possible for the physician to recognize it, ascribe responsibility to the factors involved in its production and relieve the symptoms to a larger extent.

Time and space cannot be given in this paper to a complete review of the literature. Killian, as has been said, first recognized the deformity and believed that it resulted from caries and inflammation. In 1866 Blake reported the first case in the United States, that of a multipara who had gained 100 pounds (45 Kg.). Neugebauer in 1844 studied museum specimens and, although he recognized congenital defects, believed trauma to be the principal etiologic factor. In 1897 Lovett described the first case of traumatic spondylolisthesis; his and Gibney's patient (both males) were included in the first six males in a series of 125 patients whose cases had been recorded in the literature up to 1900. Asbury reported on spondylolisthesis in 1927 and felt that it was a definite factor in the production of backache.

The apparent rarity of spondylolisthesis is due to failure on the part of the average examining physician to recognize the deformity. In 1920, for example, only one diagnosis was made of spondylolisthesis at the Mayo Clinic. The number of diagnoses of spondylolisthesis has increased *pari passu* with the increase in our clinical and roentgenologic skill and experience. In 1937 alone eighty-one cases were recognized at the clinic. During the preparation of this paper I saw three patients with spondylolisthesis in a single day.

The subluxation is frequently recognized from inspection of the back alone (fig. 1); the location and grade of the deformity and the type of congenital defect present are determined from examination of lateral and anteroposterior roentgenograms.

I have reviewed a series of 583 cases of spondylolisthesis seen at the clinic and am presenting an exhibit, consisting of roentgenograms and models, at this meeting, which demonstrates the location and grades of the deformity and various methods of treatment. Any physician who visits this demonstration may in a few moments familiarize himself with the clinical and roentgenologic appearances and have at his command the means of relief of symptoms. There is but little justification for continued lack of recognition of this deforming and disabling lesion.

CHIEF COMPLAINTS

Backache was the chief complaint in more than 80 per cent of 583 cases. Pain was projected to the sacroiliac area, hips and legs in 17 per cent of cases; an additional 7.7 per cent of patients had pain in the legs only, and less than 2 per cent complained of deformity, stiffness or paralysis. Although some of the patients may have had tingling and numbness, weakness or a feeling of stiffness in the legs, true paralysis was rarely found. The average duration of symptoms was 7.5

From the Section on Orthopedic Surgery, the Mayo Clinic.

Read before the Section on Orthopedic Surgery at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 13, 1938.

years; the shortest duration was one day, the longest fifty years. Although it is difficult to understand, 10 per cent of the patients had no complaint and the recognition of the lesion was incidental to examinations for other diseases or deformities. The typical complaint was of backache, with disability on hard labor or on

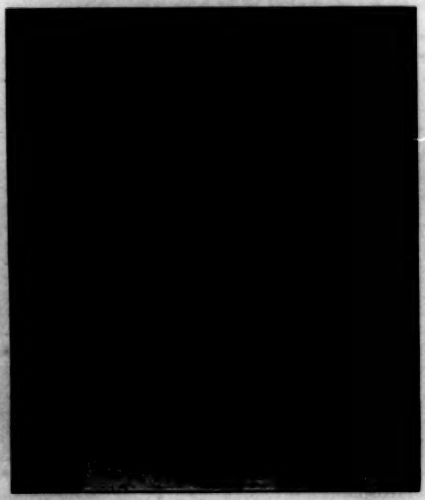

Fig. 1.—Typical deformity of spondylolisthesis, showing depression, and forward and downward displacement of lumbar spine.

stooping and lifting. Slight stiffness and weakness of the back or pain in the legs with relief of symptoms by rest, especially recumbency, was a marked feature (table 1).

DIAGNOSIS

In many cases it is possible to make the diagnosis following inspection and palpation. A prominent spinous process and sacrum with lordosis due to forward and downward displacement of the spine and slight muscle spasm are often sufficient evidence to make one suspicious of spondylolisthesis. With lesser degrees of deformity these signs may be unrecognized, but they are always present in grosser displacements, when the shortened torso, prominent erector spinae muscles, broad-appearing pelvis, and abdominal crease accentuate them. Patients with extreme types of spondylolisthesis may list to the side or may waddle when they walk, and the ribs may rest on or telescope into the pelvis; in such cases the diagnosis may be made from inspection alone. Proctoscopic examination may reveal a narrowed pelvis as a result of a hard, fixed mass projecting forward from the spine; in women this may cause difficult labor at childbirth. Pain on lifting and stooping, on being jarred and on carrying heavy objects, which pain is relieved by recumbency, is the common subjective symptom. A few patients have noticed a decrease in height.

Although I feel confident that the diagnosis can be made from these observations, as has been said one must rely on the roentgenologic examination for accurate grading of the degree of deformity and for determining the site affected and the type of anomalies present, which may be factors in its production. Roentgenologic examination will exclude tuberculosis, fractures, arthritis and tumors. Anteroposterior roentgenograms cannot be relied on to disclose forward displacement; lateral roentgenograms permit gaging of the exact degree of deformity.

Roentgenograms should include the lumbar spine and sacrum. Those familiar with the interpretation of anteroposterior roentgenograms may note the shortened lumbar spine, the superimposed fifth lumbar vertebra on the sacrum, the cocked-up spinous processes, separation of the neural arch, and spina bifida. In the lateral roentgenograms the degree of subluxation may be determined and graded 1, 2, 3 or 4, as in figure 2. To differentiate traumatic from congenital deformities may require roentgenograms taken at an angle of 45 degrees. Smooth, jointlike fissures are usually congenital, whereas irregular, sharp outlines are more suggestive of fracture. One also notes the angle and width of the lumbosacral joint, the condition of the promontory of the sacrum (whether rounded or elongated) and the presence of lipping along the margins of the vertebral bodies. Sclerosing of the articular facets, the length of the neural arch, evidence of fracture or of congenital deformity such as separation, are all observations which influence one's decision as to the etiologic and complicating factors present. A study of the roentgenograms can be carried out best in a moderate degree of light, and special attention should be paid to the contour of the spinal canal where the displacements are often more readily made out. The fifth lumbar vertebra is commonly found to be wedge shaped and the sacral portion elongated, concave and riding forward on the sacrum. The promontory of the latter may impinge

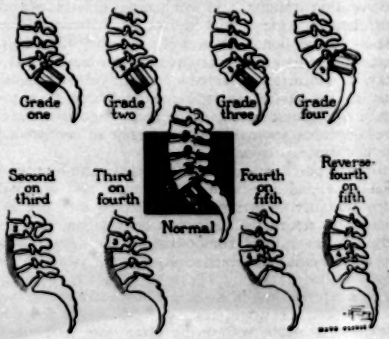

Fig. 2.—Four grades of spondylolisthesis.

between the body and the posteriorly displaced spinous process. The remarkable variation in the lumbosacral angle, which can vary fully 60 degrees, is shown in figure 3.

OCCUPATION

About 70 per cent of this series of patients with spondylolisthesis were farmers, laborers or housewives. To my mind this confirms the important effect strain and trauma have on many people, who, had their employment been less strenuous, might have gone through life without symptoms. With the more common use of the roentgenogram an increasing number of

congenital defects have been observed in the region of the fifth lumbar vertebra. When repeated strain or sudden trauma weakens the stability of these parts, symptoms arise and disability results. At the clinic we have observed that more than 10 per cent of patients have spondylolisthesis without being aware of it. The

TABLE 1.—*Chief Complaint of Patients with Spondylolisthesis and Duration*

Chief Complaint	Cases	Per Cent
Backache	368	63.1
Backache and pain in legs	99	17.0
Pain in hips and legs	45	7.7
Deformity, stiffness, or paralysis	11	1.9
Incidental observations	60	10.3
Total	583	100
Average duration of complaint		
Males		7.5 years
Females		7.4 years
Shortest 1 day Longest		50 years

TABLE 2.—*Occupation of Patients with Spondylolisthesis*

	Males	Females	Total	Per Cent
Housewives	...	157	157	26.9
Laborers	126	...	126	21.6
Farmers	120	...	120	20.6
Business	90	21	111	19.1
Professional	31	7	38	6.5
Students	24	7	31	5.3
Total	400	183	583	
Per cent	68.9	31.4		100

inferior articular facets of the fifth lumbar vertebra resting on the superior articular facet of the sacrum, with intact lamina and ligamentous support, should prevent the body of the vertebra from slipping forward. Separation of the neural arch, however, is a very common observation and it is this loss of the support to the facets which seriously impairs the strength of the lumbosacral joint, resulting in subluxation, with strain on the ligaments, stretching or pressure on nerves, abnormal posture, muscle spasm and fatigue. It is interesting to note that not only 70 per cent of our patients who had spondylolisthesis were those that did hard work but almost 70 per cent of our patients were males. Thus the past teaching that the lesion is more frequently found in females is contradicted and the strain of the laborer has supplanted the labor of pregnancy as an etiologic factor (table 2).

AGE AND SEX INCIDENCE

Fifty per cent of our patients with spondylolisthesis were between the ages of 30 and 40 years and 70 per cent were males. The average age of the males was 40.3 and that of the females 43.5 years. The oldest patient was 80 years old, the youngest eleven years (table 3). No doubt the age and sex incidence will vary with the type of practice. I have had roentgenograms of this condition in younger patients sent to me, and Kleinberg has reported one case in a child only 18 months of age.

GRADE OF DEFORMITY AND TRAUMA

A history of trauma was obtained in about 48 per cent of the cases in this series (table 4). The fact that a patient may state that he has had an injury to his back is not sufficient evidence to conclude that subluxation is the result of the injury. On careful inquiry we have found that the patient sometimes has had chronic backache for months or years prior to the injury but that, following trauma, it had become more troublesome. The type of injury likewise was often of such a nature that it could not possibly have been a factor in the causation of the deformity. In cases in which compensation is of prime importance, the patient may attribute his symptoms to trauma and deny having had backache or disability previously in the hope of obtaining financial gain. In some cases the history furnishes irrefutable proof of the traumatic nature of the condition. When doubt exists as to the cause of pain in the extremities, neurologic examination, including studies with iodized oil and examination of the spinal fluid, may be indicated to rule out the possibility of a cord tumor, slipped intervertebral disk or thickened ligamentum flavum. I attempted to ascertain the effect of trauma on the grade of deformity but was unable to establish a definite relationship. Spondylolisthesis of grade 4 following trauma is no indication that the injury is responsible for the marked deformity, for an equal number of patients with spondylolisthesis of grade 4 had no previous history of trauma (table 4). I have attempted to group the various degrees of subluxation in this series of cases into four grades. The grade or degree of deformity in spondylolisthesis is determined by the examination of lateral roentgenograms; if the fifth lumbar vertebra has slipped forward

TABLE 3.—*Age and Sex*

Years	Males	Females	Total No.	Total Per Cent
10-19	28	7	35	6.0
20-29	66	23	89	15.3
30-39	109	46	155	26.6
40-49	105	40	145	24.9
50-59	70	42	112	19.2
60-69	22	20	42	7.2
70-79	9	4	13	2.2
80-89	0	1	1	0.2
Total	409	183	583	100
Average age of male patients			40.3 years	
Average age of female patients			43.5 years	
Oldest patient			80.0 years	
Youngest patient			11.0 years	

TABLE 4.—*Grade of Deformity in Relation to History of Trauma*

Grade of Deformities	Total Cases	Trauma Cases	Trauma Per Cent
1	257	117	45.5
2	130	60	46.2
3	20	16	55.2
4	10	5	50.0
Not graded	141	60	42.2
Total	583	278	47.7

less than a fourth of the distance across the lumbosacral joint the spondylolisthesis is graded 1; if it has slipped less than half the distance it is graded 2, if it has slipped less than three fourths of the distance it is graded 3, and if it has slipped more than three fourths of the distance it is graded 4.

Of 442 patients whose degree of deformity was graded, 200, or 45.2 per cent, had spondylolisthesis of

grade 1, and it occurred at the lumbosacral articulation; in forty-seven cases, or 10.6 per cent, the degree of deformity was graded 3 and 4. In 93.4 per cent of the 583 cases in the series the deformity occurred at the level of the fourth and fifth lumbar vertebrae or at the level of the fifth lumbar vertebra and sacrum (table 5).

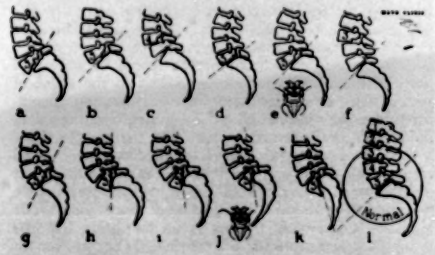

Fig. 3.—Variations in lumbosacral articulation (made from roentgenographic tracings): the lumbosacral angle can vary fully 60 degrees. The sacral angle may be rounded and the inferior aspect of the fifth lumbar vertebra may be concave. Congenital defects of the lumbar region, such as spina bifida and defects of the neural arch, are common.

LOCATION OF DEFORMITY

In 82 per cent of the cases in this series the deformity consisted of forward slipping of the fifth lumbar vertebra on the sacrum (table 6). Spondylolisthesis occurs at other levels and in this series it was found that sixty-six patients, or 11.3 per cent, had slipping forward of the fourth lumbar vertebra on the fifth. Less than 1 per cent had involvement of the third and fourth lumbar vertebrae or of the second and third lumbar vertebrae, or of the fifth and sixth lumbar vertebrae, or of the sixth lumbar vertebra and sacrum. One had double displacement, which consisted of two subluxations occurring in the lumbar spine; that is, spondylolisthesis of the fourth lumbar vertebra on the fifth and of the fifth lumbar vertebra on the sacrum. A larger number of the group, twenty-six patients, or 4.4 per cent, had deformity consisting of reverse spondylolisthesis; in this group the vertebra involved is displaced backward instead of forward. This type of spondylolisthesis gave rise to the definition, which I have stated previously, "spondylolisthesis is a subluxation, usually forward, and most commonly in the lumbosacral region, where it may produce narrowing of the pelvis."

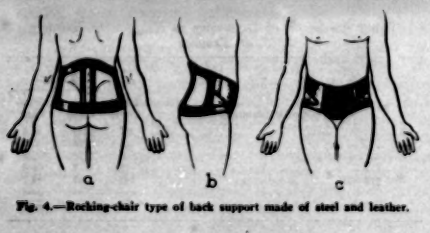

Fig. 4.—Rocking-chair type of back support made of steel and leather.

TREATMENT

In those cases in which spondylolisthesis occurs as a result of trauma and this is recognized immediately, an attempt should be made to reduce the deformity by traction and prevent its recurrence by casts. In cases in which the patient is placed in a recumbent position and traction, by means of Buck's extension, is applied, some improvement in the position of the vertebral bodies and relief of symptoms may be expected. With the legs elevated and at right angles to the thighs, and with the thighs at right angles to the recumbent spine, the weight of the torso may be utilized in pulling the vertebral bodies into better position. The insertion of a Kirschner wire through the lower end of the femur maintains this position easily and the danger of irritation of skin is obviated. This position is maintained for six weeks, and following this a plaster cast may be applied, with the legs in extension, in the form of a double spica cast extending up to the axilla. This permits the patient to be moved about or turned over on his abdomen or side; by so doing the occurrence of pressure sores is avoided. The patient is kept in this cast for a further period of six weeks. At the end of this time a lumbosacral support is applied and the patient is allowed up and permitted to walk with crutches. Should there be recurrence of the subluxation, the spine is better fused by bone grafting, as will be described in a subsequent paragraph.

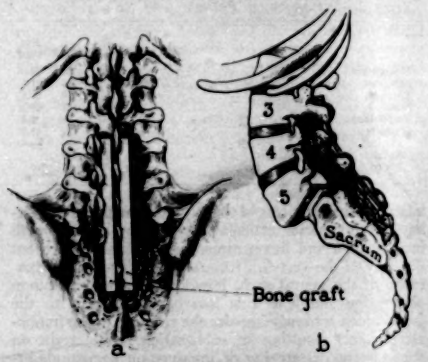

Fig. 5.—Operative procedure to produce strong fusion of the lumbar spine (including third, fourth and fifth lumbar vertebrae and sacrum) by means of double massive bone grafts, multiple bone chips and cancellous bone.

As some patients do not have symptoms or have only mild symptoms that do not cause disability, a corset reinforced by stays to support the lumbosacral spine is all that is required. In the treatment of women, we employ a strong reinforced corset and, for men, a rocking-chair or canvas belt reinforced with steel type of support (fig. 4). Many patients obtain marked relief from such apparatus and continue to carry on their work; in some cases, however, symptoms continue and fusion of the lower lumbar spine and sacrum is then indicated. Most patients who follow a laborious occupation are subject to such repeated strains and injuries that a change of occupation or an operation is necessary. But I wish again to state that there are some patients who in spite of marked deformity, of grade 3 or 4, go on working at hard labor without symptoms. In some of these cases roentgenographic studies may show that the sacrum has built up a shelf to aid in the support of the fifth lumbar vertebra; in

others, arthritic changes have apparently produced fusion in the affected region. It is apparently true that many patients have never known what a normal back feels like and have continued to work in spite of discomfort and pain.

In order to support adequately the lumbosacral subluxation and prevent further displacement, the fusion resulting from operation must be strong enough to stand the stress and strain of hard labor. As the fifth lumbar spinous process is loose and its fusion alone to the sacrum is of no value, one must go above and fuse the third, fourth and fifth lumbar vertebrae and the sacrum securely (fig. 5). To accomplish this an incision is made from the third lumbar spinous process to the second sacral segment and, with a sharp chisel, fragments of bone are turned from the sides of the processes and the laminae. With retractors in place, the chips of bone and muscles are pulled to one side and the laminae scraped so as to carry some of the bone fragments laterally. Packs of gauze soaked in hot saline solution are then placed in the cavities on either side of the spinous processes and attention is given to further roughening of the laminae and exposing the articular facets; the last named, whenever possible, are curetted to remove cartilage from their articular surfaces. As each facet is destroyed, a pack is firmly pressed into

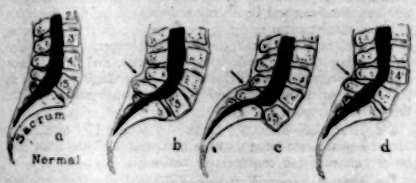

Fig. 6.—Sagittal sections through the lumbosacral area with shading of the dural sac to show pressure on the cauda equina by the displaced vertebra: *a*, normal spinal canal; *b*, grade 2 spondylolisthesis of fifth lumbar vertebra on sacrum; *c*, grade 3 spondylolisthesis of fifth lumbar vertebra on sacrum; *d*, grade 1 spondylolisthesis of fourth lumbar vertebra on the fifth.

position and the next one is exposed. The object of this roughening is to produce extensive raw surfaces of bone to which the grafts will readily adhere. Care must be taken not to perforate the spinal canal, as spina bifida of the sacrum is often present (fig. 6).

The sacrum is then roughened and a sharp chisel is used to lift thin fragments of bone. When the bed has been thus prepared, it extends from, and includes, the third lumbar vertebra to the third sacral segment. All the soft tissues between the exposed bones are removed. A long incision is made mesial to the tibial crest and a bone graft is removed; this graft, when divided, is of sufficient length to pass from the third lumbar vertebra to the third sacral segment. At times it is necessary to cut grafts with a slight curve so as better to fit them into position; the curved rim of the ilium may be used instead of tibia.

A large curet is employed to remove cancellous bone from the upper end of the tibia; from six to eight masses of cancellous bone are removed and packed in to fill the spaces between the vertebrae. The two grafts are then inserted, one on either side of the spinous processes and over the exposed sacrum, and held by interrupted sutures of number 2 chromic catgut. These sutures approximate the soft tissues, to which numerous small fragments of bone have been left attached, thus forming a bony bridge over the grafts, denuded spinous processes and laminae. The subcutaneous tissue is sutured with number 1 plain catgut, the needle picking up just enough of the deep fascia to obliterate dead space under the skin. The skin is closed with a continuous dermal suture, and a moist alcohol (70 per cent) gauze dressing of ten or twelve thicknesses is applied.

TABLE 5.—*Location and Grade*

Location	Grade 1	2	3	4	Not Graded	Total Cases	Total Per Cent
Fifth lumbar on first sacral	200	117	29	18	114	478	82.1
Fourth lumbar on fifth lumbar	25	19	0	0	22	66	11.3
Third lumbar on fourth lumbar	1	1	0	0	1	3	0.5
Second lumbar on third lumbar	2	0	0	0	0	2	0.3
Fifth lumbar on sixth lumbar	1	1	0	0	0	2	0.3
Sixth lumbar on first sacral	1	0	0	0	0	1	0.2
Double	5	0	0	0	0	5	0.9
Reverse	22	0	0	0	4	26	4.4
Total	257	138	29	18	141	583	
Per cent	44.1	23.7	5.0	3.1	24.1		100

A layer of absorbent sterile cotton of sufficient size to extend 4 inches (10 cm.) beyond the gauze is fastened by strips of adhesive tape so as to prevent contamination along the edges.

The patient is then placed on a canvas frame, face downward, and taken to bed; by means of overhead apparatus consisting of ropes and pulleys one nurse is able to raise and lower the patient for various nursing purposes. The patient is kept in the first position, that is on his abdomen, for a period of twenty-four hours and is then turned over several times a day thereafter. Stitches are removed at the end of two weeks. We prefer to keep our patients in bed and on the frame for a period of six weeks, when they are given a lumbosacral support and allowed to walk. When this technic is meticulously carried out, the resulting fusion is excellent, as may be seen from the anteroposterior and lateral roentgenograms, and it extends from the third lumbar vertebra to the third sacral segment. This operation has been performed on ninety-nine patients with gratifying results and we believe that it is the method of choice for all painful and disabling

TABLE 6.—*Location*

	Cases	Per Cent
Fifth lumbar vertebra on sacrum	478	82.1
Fourth lumbar vertebra on fifth lumbar vertebra	66	11.3
Third lumbar vertebra on fourth lumbar vertebra	3	0.5
Second lumbar vertebra on third lumbar vertebra	2	0.3
Fifth lumbar vertebra on sixth lumbar vertebra	2	0.3
Sixth lumbar vertebra on first sacral vertebra	1	0.2
Double spondylolisthesis, fourth lumbar vertebra on fifth, and fifth on sacrum	5	0.9
Reverse spondylolisthesis	26	4.4
Total	583	100

subluxations of the lumbosacral articulation or other affected spinal levels. There was no operative mortality in this series (table 7).

SUMMARY

In a series of 583 cases of spondylolisthesis involving the lumbar spine the principal complaint was backache or backache and aching in the legs. The average age of the patients was about 40 years and the average duration of symptoms seven and a half years.

About 70 per cent of the patients in this series were males, which contradicts the older teaching that spondylolisthesis occurs most often in females. The condition most frequently affects those who perform hard labor. It may be of traumatic origin or result from congenital abnormalities which have weakened the supporting structure in the lower part of the back.

Although the condition often escapes detection, the deformity can be readily recognized, at times from mere inspection and palpation. It may be proved and graded as to degree of subluxation on examination of lateral roentgenograms. A method of grading spondylolisthesis has been adopted that will permit physicians to transmit the location and extent of subluxation in an easily understood manner.

Congenital and traumatic types of spondylolisthesis must be differentiated, as this is of prime medicolegal significance in dealing with insurance companies and workmen's compensation commissions.

Not all patients who have this deformity complain of symptoms. More than 10 per cent of those included in this series had no symptoms referable to the back. As the degree of subluxation increases to complete dislocation, the shape and angle of the lumbosacral articulation is altered. Paralysis is not commonly found, although paresthesias and referred pain to the saddle area and legs are frequent complaints.

TABLE 7.—*Cases Observed*

Year	Surgical	Non-surgical	Total	Per Cent
1918	0	2	2	0.3
1920	0	1	1	0.2
1921	0	2	2	0.3
1922	1	5	6	1.1
1923	0	6	6	1.1
1924	2	3	5	0.9
1925	5	10	15	2.6
1926	5	10	15	2.6
1927	1	15	16	2.7
1928	3	16	19	3.3
1929	8	24	32	5.5
1930	4	33	37	6.3
1931	11	46	57	9.8
1932	8	33	41	7.0
1933	5	38	43	7.4
1934	7	65	72	12.3
1935	13	42	55	9.4
1936	14	58	72	12.3
1937	10	71	81	13.9
1938	2	4	6	1.1
Total	99	484	583	
Per cent	17.0	83.0		100

An operation has been devised which prevents further displacement and relieves symptoms, permitting the patient to return to gainful labor.

ABSTRACT OF DISCUSSION

DR. S. L. HAAS, San Francisco: Dr. Meyerding's paper has so well supplemented his scientific exhibit that there remains little to be discussed. Operations on children may demand special consideration, because a graft over the posterior surface would hinder growth while the bodies would continue to increase in size. There may be an increased force forward, and the displacement may become greater. The anterior bone block across the bodies of the vertebrae would be more satisfactory, as it not only would give the support where it was needed most but would tend to stop the growth of the bodies. I hope that Dr. Meyerding will add something further with regard to the treatment of spondylolisthesis in children.

DR. CHARLES LEROY LOWMAN, Los Angeles: For diagnosis roentgenograms are essential in confirming certain clinical appearances which should tentatively make one suspect the existence of the condition: (1) the absence of a posterior rounding of the lumbosacral curve on bending forward, (2) an exaggerated lumbar curve on standing, (3) the feeling to the palpating hand when the patient lies prone of a sharp dip forward from the posterior prominence of the first sacral vertebra into a hollow over the lumbosacral junction or (4) inability of the patient when lying supine to hold the extended legs in semiflexion without pain at the region of the lumbosacral junction or a feeling that he is "giving away" at that point. I should like to call attention again to the importance of roentgenograms taken laterally with the patient in the standing position to bring out the slippage in mild grades of this deviation. In severer grades the position of displacement will be fixed by muscle spasm or ligamentous shortening and can be detected readily in the lateral view taken with the patient lying down. However, it should be appreciated that, as the pelvis changes its degree of obliquity from the standing to the lying position and loses usually any lateral tilt which may exist because of short legs or structural discrepancies in the sacrum or ilium, a view showing the actual influence of the gravity load will give valuable information. Dr. Meyerding has called attention to the high incidence of congenital faults in this region; the addition of any unusual stress added to the existing weakness, which may previously have been tolerated, can easily be the factor which produces the further displacement or provokes the pain or disability which brings the patient to the physician. The common existence of flattened interarticular processes on the first sacral vertebra is, I think, an important element, because as increased obliquity occurs in the anteroposterior plane, mechanical locking is decreased and the load on the iliolumbar and anterior vertebral ligaments is increased, raising the possibility of displacement under stress. With regard to the operative phase, orthopedic surgeons have all experienced difficulty in obtaining true arthrodesis at this point, and I have been greatly impressed by the value of Dr. Meyerding's procedure in putting in so much bone over a large enough area to obtain this massive repair.

DR. J. ALBERT KEY, St. Louis: I should like to ask Dr. Meyerding to state what patients he operates on and what ones he recommends for conservative treatment.

DR. JOHN DUNLOP, Pasadena, Calif.: I should like to ask what influence the diagnosis has in compensation cases as to the cause.

DR. HENRY W. MEYERDING, Rochester, Minn.: It is interesting to note that backache was the principal symptom in more than 80 per cent of these cases of spondylolisthesis and that in almost an equal percentage of cases the occupation of the patient required heavy labor. The average age of the patients was more than 40 years, and the average duration of symptoms was about seven and one-half years. These studies have proved that the strain of pregnancy is no longer a principal etiologic factor. I believe that congenital anomalies are the principal factors in the production of spondylolisthesis and that the stress and strain sustained by patients whose occupation is concerned with manual labor are exciting factors. The condition occurred in the lumbosacral region in more than 80 per cent of the cases in this series. More than two thirds of the patients were males; this contradicts the previous teaching that the condition occurs more frequently in females. My associates and I have operated in less than a fifth of this series of 583 cases. Ten per cent of the patients had no symptoms referable to the back, and the diagnosis of spondylolisthesis was incidental to examinations carried out for other symptoms. Many of the patients who had not been disabled were relieved of their backache by the use of lumbosacral supports; this type of support is reinforced by steel stays and fits well down onto the sacrum and upward onto the lumbar vertebrae. When the occupation required activity and the patient was likely to have increasing symptoms and deformity with disability, we advised surgical fusion. The operation produces a huge mass of bone, which results in firm, bony fusion of the sacrum and the third, fourth and fifth lumbar vertebrae. Acute traumatic spondylolisthesis is treated by overhead traction by means of a Balkan frame. We have not observed any untoward results in patients who have been treated by the surgical method described. The patients were all adults who had had backache for a number of years.

THE ONE STAGE COMBINED ABDOMINO-PERINEAL RESECTION OF THE RECTUM

FRED W. RANKIN, M.D.
LEXINGTON, KY.

The choice of offensive against cancer of the rectum and rectosigmoid at the present time indubitably is surgical intervention. That the extirpation of cancer in this location can be done in conformity with the fundamental principles of radical operations for cancer elsewhere is equally true. It is axiomatic, however, that cancers low in the gastrointestinal tract demand an unusually high individualization so far as operative maneuvers are concerned. No one technical procedure is applicable to all malignant growths in this location, and many factors, including coexisting debilitating diseases, the ability of the patient to withstand formidable surgical intervention and the undermining influences of malignant processes in general must influence the choice of operation.

The well known tendency of cancers of the rectum to develop on adenomas and areas of local hyperplasia, the slow evolution of the concurring malignant process, its tendency to be of a relatively low order of cellular activity and consequently to invade lymphatics late, all allow the surgeon a remarkable latitude in the selection of operative plans.

Individualization of treatment is a paramount necessity in dealing with cancer of the rectum, and for this reason no one type of operation is applicable as a matter of routine without an excessive reduction in the operability figures and a probable increase in the mortality rate. To insure that as many as two out of three or even three out of four patients as they present themselves for examination will be subjected to operative removal, one may employ, first, the radical combined abdominoperineal resection or the perineo-abdominal operation in one or two stages; second, colostomy and posterior resection as advocated by Mummery, and, third, local excision with or without segmental resection and with or without preservation of the sphincter.

For the last-named type of operation I have small enthusiasm, believing that a colostomy is a necessary part of any operation which will give a high percentage of satisfactory end results. Colostomy does not entail social ostracism or professional incapacity, but there is a certain stigma attached to it and the preservation of the rectal sphincter in a small group of properly selected cases, namely those in which the cancer is of low pathologic grade and without metastases, is the desire of both surgeon and patient. The great difficulty in making this selection is to tell without resection which growth has remained local and which has metastasized, but the high percentage of glands now found involved in the resected specimens indicates that the crux of the situation from the standpoint of prognosis still remains a question of glandular involvement at the time of operation.

The work of Miles [1] on the lymphatics of the rectum still stands, I think, as a classic on which is predicated the logic for removal of gland-bearing tissues even to the height of the mesentery of the sigmoid flexure. Westheus [2] recently published the report of an exhaustive investigation of the lymphatics of the rectum in relation to the spread of cancer, in which he disagrees with Miles that the downward spread is of frequent occurrence. While this type of spread may permit the utilization of an operation to save the sphincter mechanism in certain closely selected cases, actually the vast majority of invaded lymphatics are in the upward zone of spread, and the most recent investigations by Gabriel, Dukes and Bussey,[3] David and Gilchrist,[4] and others prove conclusively that a higher percentage of invaded lymphatic glands are now being found by more extensive and exhaustive methods of search. In my own series of 139 cases in this study, the glands were involved in 55 per cent of the specimens.

At the St. Mark's Hospital, Gabriel, Dukes and Bussey,[3] making an extensive examination of 100 excised rectums and investigating an average of twenty-eight glands in each case and in some instances as many as sixty glands, found that 62 per cent of the resected specimens showed involved glands. David and Gilchrist [4] reported before the American Surgical Association in May 1938 isolation of between fifty and eighty glands to a resected specimen in their series of cases, with evidence of glandular involvement in 70 per cent. These studies seem to indicate accurately that extensive and thorough investigation proves the incidence of glandular involvement to be much higher than was formerly believed, and they emphasize the necessity of extensive removal of gland-bearing tissues.

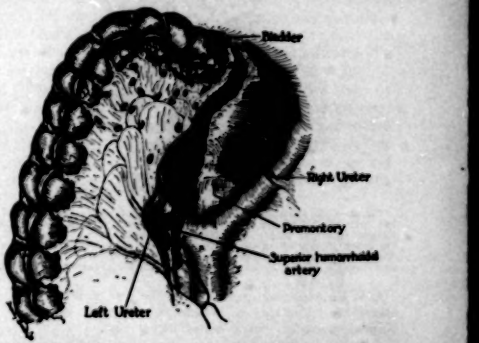

Fig. 1.—Beginning of mobilization and dissection of the pelvis. An incision in the peritoneal covering of the mesentery on its right side has been made from the inferior mesenteric vessels down to the bladder. The right peritoneal leaf is to be dissected further to form one half of the pelvic floor. Ligation of the inferior mesenteric vessel above the superior hemorrhoidal artery is shown. Both ureters are exposed.

The principles laid down by Miles [1] for his radical combined abdominoperineal resection, and consummated as radically by Grey-Turner, Gabriel and their British colleagues in their perineo-abdominal resection, more nearly, I think, answer the full requirements of radical surgical intervention than other types of operation.

Read before the Section on Surgery, General and Abdominal, at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 16, 1938.

1. Miles, W. Ernest: Cancer of the Rectum, London, Harrison & Sons, Ltd., 1926.

2. Westheus, quoted by Bastianelli, R.: Deutsche med. Wchnschr. 63:1254-1259 (Aug. 13) 1937.

3. Gabriel, W. B.; Dukes, Cuthbert, and Bussey, H. J. R.: Brit. J. Surg. 23:90 (Oct.) 1935.

4. David, V. C., and Gilchrist, R. K.: Personal communication to the author.

The advantages of the combined operation may be summarized as follows:

1. It conforms to the principles of radical extirpation of cancer elsewhere, removing the local growth and tissues in the zones of spread.
2. It permits of variations and modifications to be done in either one or two stages.
3. It may be accomplished either as an abdominoperineal or as a perineo-abdominal operation.

Fig. 2.—The pelvic dissection further advanced. Both the right and the left peritoneal flaps are demonstrated, the tumor is shown at the recto-sigmoid juncture, where two thirds of all rectal cancers occur, and the beginning application of the Zachary-Cope de Martel clamp is illustrated. This clamp consists of three independent, biting blades with end catches to hold them in place and is applied in a removable crushing instrument.

4. With increasing experience on the part of the surgeon, the operability curve may be broadened and at the same time the hospital mortality remain below 10 per cent.
5. Five year end results from the clinics of the most experienced advocates of the radical combined procedures indicate a higher percentage of five year cures than for the other types of operation.
6. Only one laparotomy is required, so that time and expense are saved for the patient.
7. The blood supply to the growth may be ligated before the pelvic dissection is undertaken.
8. The procedure is applicable to all ampullary and recto-sigmoidal cancers.

The disadvantages may be summarized as follows:

1. It has been argued that the operation involves a higher mortality than the less radical procedures.
2. The operation bears the stigma of a colostomy.

PREOPERATIVE TREATMENT

Meticulous and carefully planned routine preoperative measures unquestionably greatly facilitate the operative act. The patient should in every instance (except when acute intestinal obstruction is present) be hospitalized from five to seven days. It is my plan not to have the patient in bed but to allow him to be ambulatory and to direct all efforts toward decompression of the bowel by means of purgation and enemas. These measures are continued until twenty-four hours before operation, when the patient is given camphorated tincture of opium or lead and opium pills to allay peristalsis. I do not use continued purgation but prefer to give one large dose of castor oil at the beginning of the preparatory period and follow this by multiple daily washings with physiologic solution of sodium chloride. The usual tests are repeated as often as necessary to insure proper balance of the blood chemistry. Transfusions are resorted to when they seem necessary but are not used as a matter of routine before operation. A large amount of dextrose in the diet is insisted on. The routine cardiac and renal function observations are made, and rehabilitation during this period of decompression is forwarded by whatever means are possible.

TECHNIC

The abdomen is opened through a long low median incision which passes from the symphysis to a point about 2 inches above and to the left of the umbilicus. In all, the incision is about 10 to 12 inches in length. As soon as the peritoneal cavity is open the left hand is thrust upward to the liver to begin exploration of the abdomen from above downward. The surfaces of the liver are felt, the gallbladder is examined and the glands along the aorta, the common iliac vessels and, lastly, the growth itself are explored. The growth is tested for mobility, its operability determined and the procedure of resection begun.

The importance of the deep Trendelenburg position cannot be overemphasized, since it facilitates the packing off of the pelvis, which is exposed by a spreading, self-retaining retractor. In a woman the uterus is held up out of the top of the wound with a blunt hook, so that the bottom of the pelvis is easily exposed.

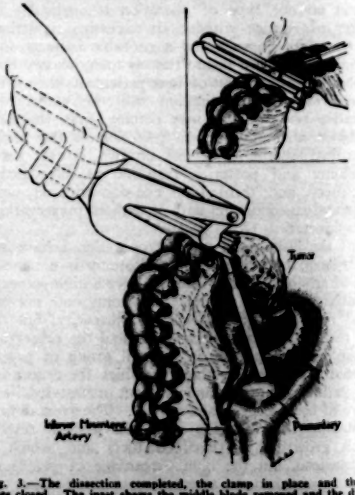

Fig. 3.—The dissection completed, the clamp in place and the end catches closed. The inset shows the middle blade removed and the division of the bowel by the cautery. Adequate blood supply to the proximal end, which forms the colostomy, is demonstrated under visual inspection.

The loop of the sigmoid flexure is drawn to the right to expose the natural adhesions between the peritoneum and the mesentery of the sigmoid flexure. These are divided by sharp dissection. It will be remembered that the colon ascends in fetal life from the pelvis and usually lies in the left side of the pelvis; as it emerges

the lateral part of the parietal peritoneum and the mesenteric covering are fused at the level of the pelvic brim.

After mobilization of the sigmoid flexure, the peritoneal covering of the left side of the mesocolon is divided about 1½ inches from its peritoneal reflection from a point opposite the main trunk of the inferior mesenteric vessels downward into the pelvis. This

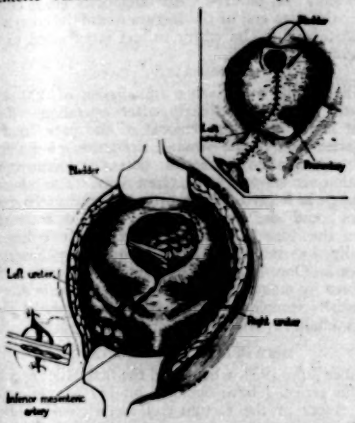

Fig. 4.—The colostomy established through a stab wound in the left groin. The tumor and the distal segment of bowel are dropped down into the pelvis, and a new pelvic floor is made by closing the peritoneal flaps. In the woman the tubes and ovaries give additional support to the pelvic floor. It is essential that all raw surfaces be covered.

incision is then extended laterally below the brim of the true pelvis and well into the parietal peritoneal covering and from there anteriorly to encircle the pouch of Douglas in the female or the rectovesical space in the male. The anterolateral portion of the peritoneum is then dissected free by blunt dissection to form the left half of the new pelvic floor. At this point the left ureter is identified, having been clearly exposed by the removal of the lateral reflection of the parietal peritoneum. It will be noted that a great deal of the mesentery has been denuded of peritoneum by this procedure. All of the mesentery of the lower two thirds of the sigmoid flexure is sacrificed.

The right side of the pelvis is then exposed, and in a similar manner sufficient peritoneum is dissected free to form the right half of the new pelvic floor. The right ureter is then isolated, although there is much less danger of ligation on this side because it normally courses farther outward over the large vessels. The gland-bearing tissues and retroperitoneal fat from the bifurcation of the aorta outward and down over the hollow of the sacrum are swept mesially to insure a clean dissection of the entire pelvic lymphatic supply of the rectosigmoid.

Dissection is then carried forward into the tissue plane which separates the seminal vesicles and prostate or the posterior vaginal wall, as the case may be, from the anterior surface of the rectum. With this mobilization carried well down into the pelvis, an anterior peritoneal flap is then created to complete the new pelvic floor.

With the hand placed in the hollow of the sacrum, finger dissection is carried still farther downward, with a division of the posterior ligamentous attachments to the point where the fascia propria of the rectum fuses with the periosteum of the sacrum at the sacrococcygeal articulation. Lateral dissection is carried out with the scissors, visualization being aided by the Kameron light. In severing the lateral ligaments one must remember that the middle hemorrhoidal arteries are concealed in them. Usually they are so small that hemorrhage does not occur, but in about 10 per cent of the cases they are found to be medium-sized vessels which require ligation.

The blood supply of the entire segment of the bowel is then identified, caught in clamps, divided and doubly ligated, the inferior mesenteric vessels being tied below the superior hemorrhoidal branch. The field is carefully inspected to avoid inclusion of the left ureter in this clamp. The left colic artery is protected to insure adequate blood supply to the proximal end of the bowel, and under direct vision the point of division of the bowel is located with relation to the pulsation of the small vessels. The vascular arcades are ligated individualiy, as the mesentery is then divided up to the intestine. The de Martel-Cope clamp is applied to the bowel after demonstration of an adequate blood supply to the proximal end. After the bowel is crushed the two end blades of the clamp are left on, the middle blade removed and the bowel divided with the cautery. The pelvis is cleanly dissected, and the entire loop of bowel to be removed is thrust down into it and covered over by the newly formed pelvic floor. The peritoneal flaps are approximated with a running suture of chromic catgut, and this is reenforced with a second line of sutures. When the patient is a woman the

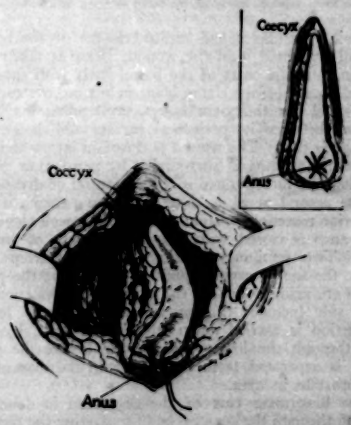

Fig. 5.—The beginning of the posterior removal of the entire bowel segment. The rectum is closed with a purse string suture, and two curved incisions extending from the coccyx to the center of the perineum encircle it. The coccyx is removed, the perirectal fat is included in the dissection and the levator ani muscle is sacrificed.

uterus, tubes and ovaries are dropped over the line of sutures, further strengthening it.

The next step is the colostomy. I prefer to follow Miles's original procedure and make the opening in the left groin through a separate incision, closing the midline incision. A circular piece of skin about 1½ inches in diameter is excised from the anterior superior

spine of the ilium on a line with the umbilicus. After removal of the skin the incision is carried directly downward through the musculature of the abdominal wall, and just enough opening is made to allow the proximal end of the bowel to be drawn out easily and yet to be held snugly by the peritoneum. Two or three interrupted sutures between the peritoneum and the

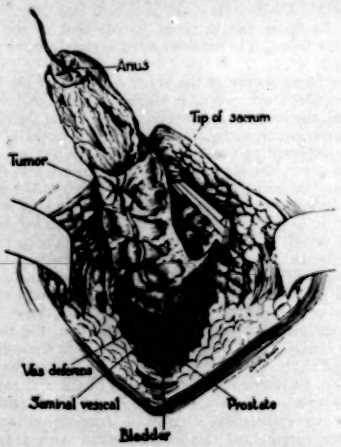

Fig. 6.—The pelvis has been opened by division of the fascia propria, and the bowel segment containing the tumor is being delivered.

epiploic appendages and mesenteric fat of the bowel are all that hold it in the wound. Care is taken not to penetrate the coats of the bowel itself with sutures. The de Martel-Cope clamp blade is left on, obstructing the bowel for thirty-six hours, until adhesions have formed between its peritoneal surface and danger of leakage is past. The wound is closed in layers and the colostomy opening is surrounded by petrolatum gauze packing and incorporated in a separate set of dressings.

The second stage is done with the patient in the posterior resection position with the hips well elevated. The anus is closed with a running suture of strong silk. Two semilunar incisions extending from just above the sacrococcygeal joint to midway of the perineum are made encircling the anus. The dissection on each side includes the fat in the ischiorectal fossa. Dissection is carried down laterally on both sides to and through the levator ani muscle before the anal canal is separated from the vagina in the woman or the prostate in man.

The lowermost part of the dissection is done by cutting through the perineal body separating the rectum from the vagina or prostate. Practically all the second stage is finished before the pelvic cavity is again opened. The sacrococcygeal articulation is divided, the coccyx being removed in all cases. The branches of the middle sacral artery frequently bleed at this point and should always be ligated. The fascia propria is then divided to open the cavity of the pelvis. The whole segment of bowel is delivered, the pelvic cavity filled with a sponge saturated with mercury bichloride solution and the bleeding points all carefully and accurately ligated.

The cavity left by the resection is filled with a gauze pack encased in a sheet of oiled silk. This pack serves two purposes, first to support the pelvic floor and, second, to prevent oozing. One half is removed at the end of thirty-six hours and the remainder at the end of seventy-two hours. The silk shield prevents any adhesions to the tissues and makes the removal of the pack painless. The wound is closed very loosely with silkworm sutures. An attempt is made only to cover the open end of the sacrum where the coccyx was disarticulated. The entire wound is expected to heal by granulation.

POSTOPERATIVE CARE

All patients are given a transfusion of 500 cc. of citrated blood immediately after operation. Forty-eight hours after the removal of the pack from the posterior part of the wound, irrigations of the cavity with warm saline solution or potassium permanganate solution are started, to be given daily. The colostomy opening is treated in the ordinary way without irrigation, and the bowels usually move spontaneously after the fourth day. Hydration and feeding are usually by venoclysis until seventy-two hours has elapsed. Once gas is passed from the colostomy, food is given by mouth. Healing by granulation is slow but is usually complete in from six to eight weeks except for a small, superficial area.

OPERABILITY AND MORTALITY

Since June 1934, when I did the first Miles operation in this series, I have operated on 139 private patients for cancer of the rectum and rectosigmoid. Of the resections, seventy-five were done by Miles's technic

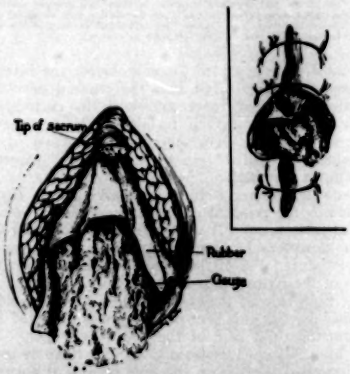

Fig. 7.—The inset shows the wound closed loosely with interrupted sutures, while the main figure shows the drainage in place. A huge dam of oiled silk is pushed into the pelvic cavity and filled with gauze packing, one half of which is removed at the end of forty-eight hours and the remainder in seventy-two hours. The pack not only prevents oozing but supports the pelvic floor until exudate makes it firm. Its removal is painless.

in one stage, six by my own type of two stage combined perineo-abdominal resection and twenty-five by Mummery's operation of colostomy and posterior resection. The Miles operations were done with five deaths, a mortality of 6.6 per cent. The causes of death were pulmonary embolism (confirmed post mortem) in two cases, peritonitis (confirmed post mortem) in two cases and cerebral thrombosis (hemiplegia twelve hours postoperatively) in one case.

Resection was done in 106 of the 139 cases, a resectability figure of 76.2 per cent. Thus it will be seen that approximately three fourths of the resections in this series were done by the one stage combined abdominoperineal method, indicating its applicability in a high percentage of cases in which meticulous preoperative care, careful operative technic and personal postoperative supervision are combined. It is an operation which calls for team work not only in the operating room but in the wards and because of the necessary cooperative management probably will not become a routine operation except in the hands of surgeons in whose practice a large group of rectal cancers are encountered.

PROGNOSIS

The prognosis depends largely on extension of the growth, and whether one estimates this by Broders' type of grading or by Dukes' method, the end results are much the same. Fortunately, the largest percentage of cancers of the rectum are of grades 1 or 2 and remain local a considerable length of time. Statistical data furnish ample evidence that radical extirpation of the rectum by the combined abdominoperineal resection or the combined perineo-abdominal operation gives a higher percentage of five year cures than the less radical procedures. However, one should consider operability percentages along with mortality curves when evaluating postoperative results, for a cautious and not widely experienced surgeon may consider a growth inoperable because of fixation, which a more experienced and daring surgeon would readily attack. It follows that definite attempts should be made to elevate the operability figure by including questionable and borderline cases so long as they do not raise the hospital death rate beyond 10 or 12 per cent.

In October 1935, before the American College of Surgeons, Abel [5] reported on a series of 164 radical operations; 104 of the patients, or 63.4 per cent, were alive and well five years later. Thomas E. Jones [6] of Cleveland presented before the same assembly a series of 151 cases, in 52 per cent of which the patient was living and well five years postoperatively.

The colostomy and posterior resection, a valuable operation applicable in a wide range of cases, has in my hands given a smaller percentage of five year cures. In June 1933, before the Section on Surgery, General and Abdominal, of the American Medical Association, I reported from the Mayo Clinic 300 cases of posterior resection, in 36 per cent of which the patient was well after five years. Mummery reported a higher percentage of satisfactory results from his operation and, using Dukes' grading, found that survivals for all grades numbered 52.5 per cent of the five year cures.

From these figures, if one considers the stage of the tumor at which operation is undertaken, it seems that the curability curve is raised by the radicalness of the operation, and, by the same token, that multiple operations are necessary to insure a high percentage of resections.

Radical surgical intervention may be accomplished more satisfactorily by the combined method of resection, but the utility of other types of operation is undeniable. To both Miles and Mummery the surgical profession owes a debt of gratitude for their pioneering, fundamental work, and the operations of both men must certainly be included in any surgeon's armamentarium.

5. Abel, A. Lawrence: Five Year Cures of Cancer of the Rectum by the Radical Abdominoperineal Excision, Surg., Gynec. & Obst. 60:481-482 (Feb. 15) 1935.

6. Jones, Thomas E.: The One Stage Abdominoperineal Operation for Carcinoma of the Rectum, Ann. Surg. 102:64 (July) 1935.

ABSTRACT OF DISCUSSION

DR. THOMAS M. JOYCE, Portland, Ore.: There is the liability to obstruction when the colostomy is made on the left side, unless the opening between the mesentery of the sigmoid and the parietal peritoneum is closed. I have been unfortunate in having this happen to me twice. Again, in making the opening through the abdominal wall for the colostomy it is very important that the slit through the fascia be adequate, for if this is tight it is likely to cut through into the bowel and there will be an abscess below the skin and in the abdominal wall. I have been unfortunate to have had this experience. I do not use sutures in the bowel. I have seen reports of these abdominal wall abscesses which were thought to be due to diverticula, but I believe they are due to an inadequate opening through the abdominal fascia. I have one more little procedure in the technic of removing the mesentery of the sigmoid which I remove high, in an effort to get all the gland-bearing area, just as thoroughly as I would in removing the axillary glands with a carcinoma of the breast: instead of attempting to put the whole sigmoid retroperitoneally, I remove this segment with the glands, and it usually amounts to about 8 or 10 inches. It is then very easy to put the distal segment retroperitoneally and close the floor of the pelvis without the least difficulty. Next I would mention the care of the colostomy. I do not believe in using any sort of container or rubber bag, such as one so often sees exhibited and advocated. With the usual cleaning out each morning, flushing of the sigmoid, using a pad of cotton over the colostomy opening and a thick canvas square which goes over the colostomy, with elastic bands around the abdomen to hold it in place, one will have no trouble whatever with discharge from the colostomy. Dr. Rankin mentioned that his operability was practically 76 per cent of the patients that come to him. I have a connection with a large municipal hospital at the University of Oregon where we have found the operability to be 23 per cent. At St. Vincent's Hospital, where the private patients come, our operability is 61 per cent. The longest span of life of those who were considered inoperable at the County Hospital was six months. It has been our practice to have adequate preparation of from four to six days, especially in decompressing the bowel, with preoperative blood transfusions, and in the majority of cases in which we are able to have adequate preoperative decompression we are able to do a one stage abdominoperineal resection. However, there are some cases among the elderly in which, even with adequate preparation, we have thought it advisable to do the two stage operation or the Mummery operation in two stages.

DR. HARVEY B. STONE, Baltimore: As Dr. Rankin stated, the Miles type of operation has definite advantages. It is true that it is a formidable procedure but experienced surgeons are performing it with a mortality of 10 per cent. This is not prohibitive considering the grave nature of the disease and the increased prospect of five year cures offered by this operation. One is somewhat surprised to read of the much higher mortality figures reported from some of the German clinics. In no sense of criticism, one may hazard the guess that this difference may be due to another point emphasized by Dr. Rankin, the essential importance of adequate preoperative preparation. Thorough clearing of the bowel beforehand, rest and building up of glycogen reserve, and the free use of transfusion of blood before and at the end of operation are probably more responsible for better immediate results than improved technical maneuvers in the operation itself. Nevertheless, in such a major surgical attack, skill, experience and well organized team work are of the greatest importance, and, as Dr. Rankin has hinted, men whose work does not provide fairly frequent opportunity to acquire these facilities may be reluctant to adopt the Miles operation. The fact that this is a single stage procedure and that it permits early control of the major blood supply of the whole field are other advantages Dr. Rankin has pointed out. But to my mind the greatest argument for the Miles type of

attack is that this principle of approach alone allows adequate removal of the zone of lymphatic spread of the disease. Only by this method can one deal with cancer of the rectum in accord with those principles of surgical treatment of malignancy first established for the breast and now regarded as the best that surgery has to offer in the cure of cancer. It is true, as Dr. Rankin and other authorities always point out, that in the field of rectal cancer one cannot restrict oneself to a single method of operating. Variations in anatomic location, size of the lesion and condition of the patient all enter into the decision of the best way to handle each individual case, and certainly the one stage abdominoperineal resection cannot be universally employed. Nevertheless, where it is suitable it remains the best chance of permanent cure, when performed by experienced and competent surgeons. It is not appropriate to talk about details of technic at such a meeting as this, except to compliment Dr. Rankin on his clear and concise description. In only one point do I differ from him, preferring to do the second step of removal of the rectum from below in the exaggerated lithotomy position.

Dr. Thomas E. Jones, Cleveland: At the Detroit meeting eight or ten years ago I read a paper on this subject for this section. It was not very graciously received for the simple reason that it was thought that the procedure was too formidable and the mortality too high. However, it had seemed to me that the fault was not with the operation itself but with the fact that the preoperative treatment in this type of case had been inadequate. Following Miles, I kept these patients in bed eight or ten days and it was apparent that the chronically obstructed bowel could be decompressed with this method just as easily as by colostomy, and I started to do the combined abdominoperineal operation in one stage. It has been very satisfactory in my hands. With regard to the two stage operation, it has been my experience many times that when an exploratory operation was done and the condition seemed inoperable at that time, on reoperation in two or three weeks the condition found would be the same—inoperable. In the last 200 cases I have brought the colostomy out at the midline. The patients seem to like it better. I advise against the use of the colostomy bag but if patients insist on wearing a bag at least they look symmetrical and that is very important for the woman patient. In a series of 300 cases done in one stage, with an operability of 64 per cent, my mortality was 9.2 per cent. I am sure it is not only the technical maneuver, which is after all a small part of this, but also the preoperative care and care of the patient after the operation that contributes greatly to its success.

Dr. Fred W. Rankin, Lexington, Ky.: I am happy to have the gentlemen who discussed this paper agree that colostomy is not such an undesirable companion and is entirely compatible with a useful professional and social life. There are just two or three things to remember about a colostomy. One is that it has to be made properly, and in making it properly one has to take the slack out of the bowel and bring the loop out through as small an opening as is adequate. Secondly, care must be taken to obviate the possibility of herniation either of the mucosa or of the whole bowel. A hernia around a colostomy is very unpleasant. If these two technical steps are taken care of and the patient is put on a proper regimen and has the proper mental attitude toward the colostomy, I can imagine many things that are much more uncomfortable and disagreeable to possess. Dr. Joyce's point about obstruction following the making of a colostomy in the groin is well taken. I have seen this happen occasionally, but I believe the two factors most important in obviating it are, first, to have no raw surfaces in the neighborhood of the dissection which a loop of bowel can slip around and become adherent to; secondly, have a sufficiently large opening for the loop which is being utilized for the colostomy, or to close that lateral gutter with a single, continuous suture during the course of the operation. Also, these cups and general devices which are widely advertised are not only entirely unnecessary but largely undesirable. The colostomy should be adequately attended to and emptied, and the patient is kept on a diet which keeps away from loose stools. I think that proper attention to the colostomy in the morning, or occasionally in the evening, depending on the patient's own choice, and an ordinary elastic supporter with a pad of cotton or gauze over the protruding mucous membrane are better. I agree with Dr. Stone as to bladder involvement being an indication of inoperability. I have four times removed a large portion of the bladder with a carcinoma of the low sigmoid successfully so far as the operative mortality is concerned, but the longest existence after any of these procedures was two years, and it is hardly worth while, to do a large, difficult job when a palliative operation to relieve the patient would probably have done just as well. I question whether it is worth while attacking a carcinoma of the rectosigmoid or the lower sigmoid which has already become adhered to and invaded the bladder. I wish to emphasize Dr. Jones's remark that certainly one of the most important phases in the removal of a cancer of this portion of the genito-enterologic tract is the adequate preparatory period, which has now become a rather routine custom in this country. I believe that some of the mortality from our colleagues of the continent would be avoided if they indulged in a little more preliminary preparation before operation was taken.

MARRIAGE AMONG MENTAL DEFECTIVES

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BOSTON
AND
LLOYD H. ZIEGLER, M.D.
WAUWATOSA, WIS.

Among average or superior members of society, marriage presupposes adaptations and creates problems of a varied nature. It is difficult for all these to be satisfactorily resolved, even with every aid that can be brought to bear on them. In the case of handicapped persons who marry, the problems that ensue are no less numerous or complicated. But among the feebleminded the awareness of such problems, by the nature of the circumstances, is relatively defective, and the burden of solution must be assumed largely by others in society more capable of bearing them.

This study was suggested by the admission of a woman to the public obstetric service of a large hospital. The facts pertaining to her are neither new nor unique. Doubtless similar persons can be found in any community. Her history follows:

Hospitalization.—Mrs. Q., a woman aged 20, was admitted to the indigent obstetric service June 19, 1935, at term, in her third pregnancy, which was normal. The children of two previous pregnancies had died soon after birth. Delivery of a male child weighing 7 pounds 14 ounces (3,573 Gm.) was spontaneous. The patient remained in the hospital fourteen days on a permit financed by the welfare department of the city. Her recovery was uneventful, except that it was noticed that she was uninterested in her environment and was unresponsive to instructions given by her attending physician for the care of herself and the baby. These features were so impressive that psychiatric consultation was obtained. The psychiatrist found that, according to the Stanford revision of the Simon-Binet intelligence test, her intellectual growth had been arrested when she was 7 years and 1 month old. Her basal mental age was in reality but 6 years. The intelligence quotient was 44. She did not know the meaning of Easter or the Fourth of July.

Family.—Such observations naturally aroused curiosity about her family. The patient's father had died of tuberculosis. Little more could be learned about him. The patient's mother, aged 51, lived with the patient and was usually dressed in filthy,

Read before the Section on Nervous and Mental Diseases at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 15, 1938.
From the Department of Gynecology and Obstetrics and the Department of Neurology and Psychiatry of the Albany Hospital and the Albany Medical College, Albany, N. Y.

ragged clothes. Her intellectual growth had become arrested at 8 years 4 months, according to the Stanford revision of the Simon-Binet test. She had been married twice and had been pregnant nine times; six children survived. Two of these were the patient and her identical (monozygotic) twin sister, whose intellectual growth was arrested at 6 years 10 months. It was also said that none of the other four children could read or write or do more than simple labor at irregular intervals. By further investigation it was learned that the living conditions of the brothers and sisters were little if any better than those of the patient. Petty crimes had been committed by some members of the family.

Past History.—The patient's past history has been obscured by the absence of intelligent observation and potent memory. She had gone to school a short time but had not learned to read or write. She and her twin sister had had speech defects from an early age. The patient was legally married at 17 by a clergyman to the son of a junk collector whom she had known but a few days. The reason given for such a hasty marriage was that she wished to show her twin sister, who had married five days earlier, that she could "catch a feller, too." Her husband, about ten years her senior, was regarded as a shiftless, incompetent laborer, known to use liquor to excess. He had been the recipient of some form of public or private relief almost continuously since his marriage. He had been known to sell welfare food orders to buy liquor.

Home Conditions.—The visit of a social worker to the patient's home revealed almost unspeakable conditions. The family had moved frequently, being evicted for nonpayment of rent. At the time of the visit, several months after the patient had left the hospital, they were living in the poorest section of the city on the top floor of a very rundown three story frame house facing the railway tracks. The three room apartment was sparsely equipped with old and broken furniture; in fact, one room contained no furniture whatever. The rooms were filthy and disorderly. The floor was covered with ashes and sticks of wood. The only bed present had a soiled mattress and a grimy old blanket. Burlap sacks were used as pillows. The dining table was covered with old potato peelings. A few dishes and kitchen utensils were scattered about. The apartment was nearly as cold as the winter weather outdoors.

Follow Up.—The social service follow up of the patient and her family is a sordid tale of hardship and poverty. Her husband worked but little, becoming intoxicated whenever

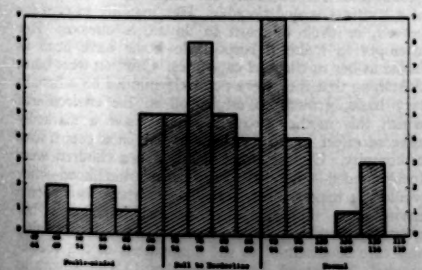

Chart 1.—Distribution of patients according to their intelligence quotients.

possible, at which times he was cruel and quarrelsome. The entire family suffered from undernourishment, insufficient clothing and cold. The baby died at 7 months of age as a result of injuries sustained from inhumane treatment during a drinking debauch of its father. The patient was four months pregnant at the time of the death of the child. The fourth child has since been born in the hospital, and the mother and baby are being observed in the free clinic. The needs of the family are met by the city welfare department. Between 1932 and 1936 the patient's family and her nearest relatives were granted in excess of $9,000 for relief and hospitalization.

In perusing the records of the hospital it was not difficult to find many others in the files of the obstetric department not unlike that of Mrs. Q. This fact prompted the study of fifty unselected married patients seen in the free antepartum clinic over a period of about four months between July and October 1936. The Stanford revision of the Simon-Binet test was given to these patients by an experienced psychologist. The results of this study are recorded in chart 1 and

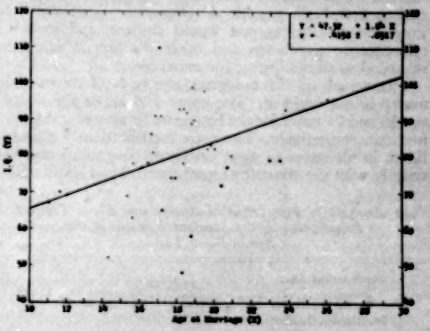

Chart 2.—Intercorrelation between age at marriage and intelligence quotient.

the table. The distribution of intelligence quotients approximates a normal curve in outline, suggesting random selection of the patients investigated. According to the tests, 22 per cent of these married women were feebleminded, which is a far greater percentage than is to be found in the general population. In reality, they have participated in a form of child marriage, usually with governmental and religious sanction, that constitutes a more hazardous factor to society than the occasional child marriages so much publicized recently. And because of these marriages in our country, among persons imprisoned in a perpetual and unchanging childhood, it ill becomes us to cast the first stone at Mother India.

The intelligence quotients were plotted against age at marriage, as indicated in chart 2. This chart demonstrates, in general, that the lower the intelligence quotient the earlier they tended to marry.

In recent years the declining birth rate has attracted considerable attention. In order to learn something about pregnancy rates, the records of 964 obstetric patients who were delivered at the Albany Hospital in the years 1931-1935 were analyzed. Two hundred and sixty-two of these patients were confined in the maternity division supported by public funds. The remainder were able to pay for their own hospital care. The average number of months of exposure to pregnancy between pregnancies was 12.5 for the indigent group, in contradistinction to 22.4 for the self-supporting group, thus demonstrating a marked difference in the procreativeness of the two groups.

Perhaps of equal significance with birth rate is the survival rate of the children. In the case of the indigent group, the infant mortality was 94.6 per thousand live births, whereas for the self-supporting group it was 40.9. An analysis was made of the number of infants surviving the first year of life. A thousand pregnancies

in the indigent group produce 772 infants 1 year old, while a thousand pregnancies in the self-sustaining group produce 861 surviving infants. How well the children of these two groups may survive into the future is a problem, although it is known that the death rate among idiots and imbeciles is much higher than it is among normal people.

From such a survey we were led to consider the statutory impediments which the various states have enacted to prevent marriage among persons with outspoken arrests in psychic development. Such statutes vary enormously, as one would suspect, and include reference to psychoses and other diseases which are regarded as disqualifying for marriage.

The actual, or chronological, age of legal consent to marry is not uniform. The upper and lower age limits are 16 and 21 years for the female in Tennessee and Connecticut, respectively. There are modifications for these limits in all states to meet emergent obligations and to comply with the consent of guardians. Most states with

An Analysis of Fifty Routine Antepartum Clinic Patients Investigated by the Stanford Revision of the Simon-Binet Test

Chronological Age:	
Range	16 yrs.-43 yrs., 11 mos.
Median	24 yrs., 10 mos.
Intelligence Quotient:	
Range	0.46-1.13
Median	0.81
Q^1	0.715
Q^2	0.81
Q^3	0.925
Mental Age:	
Range	88-217 mos.
Mean	156.1 mos.
Median	12 yrs., 11 mos.
Q^1	11 yrs., 5 mos.
Q^2	12 yrs., 11 mos.
Q^3	14 yrs., 8 mos.
Standard deviation from mental age	29.37

decrees prohibiting marriage among the feebleminded provide for the withholding of the marriage license by the town or city clerk or other authorized person if he is aware that either party is legally incompetent to marry. In New York State a clerk who issues a license to marry to persons not competent, without first requiring them to make an affidavit showing that they are legally competent, shall be guilty of a misdemeanor. In the same state it is a misdemeanor to solemnize marriage if it is known that either of the parties is under the age of consent or is insane or an idiot, but the domestic relations law of New York permits the clergyman or officer, without such knowledge of legal incompetence, to solemnize matrimony legally once the license has been issued. In a number of states the applicant for a marriage license must make affidavit that he is free from the aforementioned defects.

In the District of Columbia and in nineteen states feebleminded persons are not prohibited from marrying, although in some of these states the marriage may subsequently be declared void by judicial decree if one of the parties is an idiot or insane.[1] Twenty-nine of the states have laws attempting to cope with the problem. Perhaps the simplest is the Illinois law, which states that "no insane person or idiot shall be capable of contracting marriage." Massachusetts requires the certification of mental defect or disease in an institution to prohibit marriage. In Iowa the state board of control supplies quarterly to clerks of the court a list of such certified defectives who are disqualified for marriage. The clerk must refer to the list to be sure not to grant a license to a disqualified person. North Dakota requires an affidavit from a duly licensed physician showing that the contracting parties are not feebleminded or otherwise disqualified. The North Carolina law defines the nature of the physician's duty in so certifying to the competence to marry, and false statement is a misdemeanor.

Many states prohibit clergymen or other officers from solemnizing marriage if it is known to them that either party is feebleminded or has other disqualifying conditions. In Virginia any one having knowledge of such disqualifying attributes may appear before the clerk or clergyman and give reason why the marriage should not be consummated. In New Hampshire such questionable issues are referred to the state board of health.

Most states fail to acknowledge that marriage may entail the support of a family. In this respect the Indiana law (section 44-207) is unique and deserves being quoted:

> No license to marry shall be issued where either of the contracting parties is an imbecile, epileptic, or of unsound mind, or under guardianship as a person of unsound mind, nor to a male person who is or has been within five years an inmate of any county asylum or home for indigent persons, unless it satisfactorily appears that the cause of such condition has been removed and that such male applicant is able to support a family and likely to so continue. . . .

COMMENT

From our observations, and those of others, it seems clear that the feebleminded above the grade of idiot may marry without much restraint even in states that have laws disqualifying them. The feebleminded tend to marry earlier than normal adults and apparently they procreate more rapidly.

Our patient, Mrs. Q., was allowed to participate in a marriage contract without being sufficiently investigated. Her responsibility for entering into any kind of a contract is questionable. Her inability to care for herself, or even to learn to do so, is obvious. Her attempts to make a respectable home have been as feeble as her intellectual capacities. Children were born. Assuming that they were not feebleminded on a hereditary basis, growth to adulthood in the environment which this mother provides would have a markedly adverse effect in fitting them to live in a cooperative community. On the other hand, if her children were feebleminded—and this is the greater likelihood—they would perhaps suffer less harm from their home environment than those of normal intelligence but would nevertheless be deprived of the basic training and care so essential to the adaptations of the feebleminded. It seemed natural for Mrs. Q.'s neighbors to be critical of her inadequacies. In the light of her definite arrest of psychic development, it is clear that her critics were neither understanding nor constructive in their condemnations.

One is impressed by the efforts of relief agencies who, with the best of intentions, pour out aid in such situations—firmly conditioned by incontrovertible facts—thus perpetuating them without much amelioration. This brings us to a consideration of the laws that have been intended to cope with such problems.

Unfortunately, law makers are not always biologists and therefore may not be sufficiently conversant with

1. Feebleminedness is very different from a psychosis, which may occur in persons of superior ability. Insanity is a legal term implying lack of responsibility sometimes associated with these disorders.

conditions they aim to modify or control. Laws not infrequently mention idiocy (mental age 0 to 3 years) as a condition disqualifying for marriage. Few, if any, idiots are capable of attempting to contract marriage or to reproduce. Arrests of psychic development above this level (imbecility, with mental ages 3 to 7, and moronism, with mental ages 7 to 12) are frequently not mentioned in marriage-disqualifying laws. Most of such defectives are by nature incapable of, and irresponsible for, making contracts such as marriage. Since they often appear to be normal adults—but in reality are mere children—they are taken advantage of and exploited. In difficult times and in environments where they are not understood (and they usually are not) there is little recourse for many of them except in delinquency, relief rolls, or starvation.

Feeblemindedness is a biologic condition, or state, with many possible causes. Heredity plays a considerable part in the transmission of this disease entity when it is not caused by injury or infection of the brain. It deserves to be classified with other diseases. It seems to be no minor defect in our marriage laws that they should in many instances be so worded as to place the responsibility for the recognition of this disease on a clerk, on a clergyman without medical training or on the defective himself. As a matter of fact, only a small percentage of physicians have had the training and experience to administer the tests by which feeblemindedness above the very lowest grades may be recognized.

Governments have not attached sufficient importance to the age at which intellectual growth ceases; this is of much greater significance than the actual age of the person. If one examines the inmates of prisons, almshouses or reformatories, people on relief rolls or women who give birth to children out of wedlock, one finds that a far larger percentage of persons is included whose psychic arrest has occurred in childhood than is found in the population as a whole, in which the incidence of feeblemindedness is about 4 per thousand inhabitants.

Sterilization has been advocated as a means of removing effectually the feebleminded from the race. While students of the subject realize that the widespread use of this device can work but slowly, and perhaps ultimately ineffectually, nevertheless it may be applied to certain individuals to enable them to defend themselves from responsibilities which they are ill fitted to carry. A number of states have passed laws relating to the sterilization of defectives. In 1927 the United States Supreme Court upheld the validity of the Virginia sterilization law. Justice Holmes, in rendering the report, said:

> We have seen more than once that the public welfare may call upon the best citizens for their lives. It would be strange if it could not call upon those who already sap the strength of the state for these lesser sacrifices, often not felt to be such by those concerned, in order to prevent our being swamped with incompetents. It is better for all the world, if instead of waiting to execute degenerate offspring for crime, or to let them starve for their imbecility, society can prevent those who are manifestly unfit from continuing their kind. The principle that sustains compulsory vaccination is broad enough to cover the cutting of the fallopian tubes. . . . Three generations of imbeciles are enough.

Segregation, with suitable vocational training, will do much to enrich the lives of some of these less fortunate people. At the same time, the social hazards of reproduction in this group can be eliminated. This has never been adequately tried. If the costs of relief, dependence, delinquency and disease attributable to the feebleminded could be transferred to the ledger on the side of wise segregation and training, not only would there likely be a definite and immediate pecuniary saving but there would also be future dividends of humanitarianism and prevention.

Compulsory registration of the feebleminded is another way of attempting to deal with the problem. Reporting should be done to a central office, such as the department of mental hygiene or the department of health. Only those found by qualified examiners to have intelligence quotients of 70 or less should be registered. In this way the following of defectives and typhoid carriers would have much in common. Detection of persons with arrest of psychic development should begin in the public and private elementary schools. School officials could cooperate best by selecting for special study students who are retarded in their progress from grade to grade and those of school age who, by reason of their mental deficiency, have never been able to attend school. The wise utilization of knowledge about registrants might be vested in the authority of a commission having extensive knowledge and experience with such persons. Lists of registrants and consultation privileges with the special commission should be available to clerks and clergymen responsible for the licensure and solemnization of marriage. Under such circumstances, laws disqualifying the feebleminded for marriage might be enforced more effectively. Courts should also have access to the same service. Too frequently courts sentence offenders in accordance with a legally specified prison term when, in reality, an unchangeable biologic condition exists, unameliorated by prison experience; from such persons the safety of society requires perpetual segregation. No single plan, or any combination of several methods, can be perfect. Such a commission, however, could utilize registration, wise guidance and supervision, sterilization and segregation, depending on the situation, in the most practical ways to discourage or prevent reproduction and antisocial living.

The expenditures incurred in the United States by allowing the feebleminded to live as they wish, with palliative assistance, has perhaps been one of the heavy prices we have paid for what we call personal freedom. We are at the threshold of a reappraisal of the liabilities and the assets involved which can come about through a broadened interest in the public health. If individual liberty is lost when one has smallpox or leprosy, it would seem that the chronic disease feeblemindedness might be controlled in the interest not only of the patients themselves but for the health, economy and safety of the public as well.

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ABSTRACT OF DISCUSSION

DR. DWIGHT L. WILBUR, San Francisco: The authors have raised some questions with regard to problems which will vitally affect our future. I agree that further study should be made of the problem of marriage among those who are mentally defective with the idea of reappraising the liabilities and assets of such marriages to the public health. There is still much controversy with regard to the influence of heredity on the mental equipment of the offspring and with regard to the effectiveness of sterilization of mentally defective persons in controlling the incidence of mental deficiencies. Since the problem has legal and sociologic implications, it seems that it would be wise to have more data available before addressing methods of

control of this problem to the courts and to sociologists and social workers. It should be recalled how difficult it has been to obtain enforcement by legal means and acceptance by the public of such well established methods of public health control as vaccination to prevent smallpox and as antitoxin in the prevention and treatment of diphtheria. Of equal importance to a study of the effect of hereditary influences and of sterilization in the control of feeblemindedness and of other types of mental deficiency is a study of the influence of environment on the offspring of normal and of mentally defective persons. Such a study should be made before a definite policy is established with regard to the methods of dealing with this problem. Until further studies of the effect of heredity and environment on the development of mentally abnormal persons are available and lead to fairly definite conclusions, it would be wise for us to assume a rather conservative attitude in adopting an aggressive policy with regard to the best method of handling the problem of marriage among mentally defective persons.

Dr. Lawrence Kolb, Lexington, Ky.: The authors are to be commended for bringing to attention in a striking way the folly and danger of unrestricted breeding of the unfit. It has become the fashion these days to scoff at measures designed to improve the race or to prevent its deterioration. The statistically minded tell us that if all the feebleminded were sterilized there would be no definite decrease in the total number in the next generation, and unfounded statements are made that if eugenists had had their way such and such a genius would never have been born. Breeding psychopaths and other defectives on the chance that one of them might turn out to be a genius is much like sowing weeds in a corn field with the hope that one may bloom into a beautiful flower. In any event, whatever might be said for the psychopath as a source of genius surely does not apply to the feebleminded. The authors show that 22 per cent of their indigent groups of pregnant women were mentally defective according to accepted methods of testing, that the lower the intelligence quotient the earlier they tend to marry, and that the birth rate among the indigent is higher than among self-supporting more intelligent groups. We may rest assured that the innate selfishness common to all groups will prompt the more intelligent to disregard the unfavorable birth trend so far as it applies to their own personal convenience, while the morons, through unintelligent indifference to anything but animal needs, will continue to breed at a high rate. The remedy then lies in some positive action by the intelligent group. A start has been made through the medium of certain state laws, but these laws are, as a rule, ineffective, owing in part to the indifference or lack of sympathy of the public. The public must be aroused to the dangers in the present situation and the possibilities of improving it through measures that will take account of the defects inherent in intelligence testing and which will not interfere with the normal sexual urges of any one. The authors have given a broad outline of how the problem should be approached, but the public must be further educated before adequate remedies can be applied.

Dr. Fred O. Butler, Eldridge, Calif.: Our experience in California is worthy of mention at this time. Perhaps some are not aware of the extent of sterilization that has been done in California, especially at Pacific Colony and Sonoma State Home, the two institutions for defectives in this state. We have sterilized to date over 12,000 mentally defective and insane, over 3,300 of this number at the Sonoma State Home, and of this number about 400 are married and getting along satisfactorily. We feel that without sterilization our marriages would not be so successful, when it is considered that they come from families with as many as twenty-three defectives in one family and the next largest family having seventeen defectives, both parents also being defective and likewise the grandparents. We have several of three generations in our institution and only one instance in which the offspring of these defective parents has been brighter than the parents, the majority of them having been far lower mentally than the parents. The average intelligence quotient of those married is about 60. Their marriages are about 100 per cent more successful than the marriages among the group presented here today, partly because of the careful investigating and the approving of the marriages. I feel that we do this more thoroughly than is done by the average normal parents with their own sons and daughters because we feel a responsibility in allowing these boys and girls to marry. We ascribe our success to thorough investigation by the psychiatric social service department and keeping them under close supervision for about two years. Many of them have their own homes and they fit into communities far better than many so-called normal people. This could not, of course, be done so successfully without the operation for sterilization, which prevents a burdensome family on their hands. We have many come into our institution, the family having been broken up on account of their inability to care for their children.

CANCER OF THE LARYNX

CHEVALIER JACKSON, M.D.
AND
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The literature of malignant disease of the larynx is so voluminous that any presentation should have a bearing only on the as yet inconclusively determined phases of the subject, especially those that seem to call for revision of opinion.

We have therefore analyzed our data with a view to determining what light they throw on the following questions:

1. Is the physician justified in limiting the use of irradiation to cases in which operation is contraindicated?
2. Where shall the line be drawn between cases for operation and cases for irradiation?
3. What is the bearing of the degree of malignancy on the choice between operation and irradiation?
4. Is it justifiable to do a laryngectomy for a small growth in the anterior commissure even if the degree of malignancy is high?
5. In view of the later improvements in the technic of irradiation is the surgeon not justified in doing fewer laryngectomies?

1. IS THE PHYSICIAN JUSTIFIED IN LIMITING THE USE OF IRRADIATION TO CASES IN WHICH OPERATION IS CONTRAINDICATED?

Our statistics show that up to the year 1930 the results of irradiation were so disappointing that, unquestionably, no patient with a growth of the class regarded as operable should have taken the practically hopeless chance of even relative cure by irradiation. Since the year 1930, however, our observations have led us to believe that there are growths classed as operable for which the patient is justified in choosing irradiation in preference to operation. The year 1930 was selected as the dividing line somewhat arbitrarily for convenience in studying our statistics. It should not be inferred that there was an abrupt change in our results or our opinion. In fact there is so much overlapping in the clinical evidence that a dividing line could not be clearly determined, and the evidence does not yet warrant a conclusive opinion. But the contrast afforded by the grouping of cases observed before and after the date mentioned has yielded a basis for present guidance in selecting the form of treatment that seems best for each particular patient.

Our statistics do not as yet justify abandonment of the well established operation of laryngofissure when the

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growth is operable by this method. By operable growth in this connection we mean early intrinsic cancer of limited extent.

On the other hand, when the malignant growth is locally ideal for operation but the patient is a bleeder or has a serious organic ailment such as marked arteriosclerosis, advanced cardiac disease, intractable diabetes, pulmonary tuberculosis, a psychosis, or any other condition abnormally shortening life expectancy, we would now class the patient as unsuitable for operation whereas formerly we would have advised operation. In other words, though we still feel that we should limit irradiation to the class of patients unsuitable for operation, classification of patients has been somewhat changed by the improved results obtainable by irradiation and we now classify as unsuitable for operation a somewhat larger proportion of patients with early intrinsic disease.

Table 2 shows data from our records bearing on the question of irradiation in the treatment of cancer of the larynx.

Terminal records are incomplete. So far as can now be determined no patient survived a year after the beginning of the irradiation. All the patients were deemed unsuitable for operation for local or general reasons. Three patients with positive serologic reactions had energetic antisyphilitic treatment before irradiation was begun. Many of the patients in this series were seen in consultation and were not followed through the treatment.

TABLE 1.—*General Data on a Series of 631 Cases of Malignant Disease of the Larynx Observed Prior to 1930*

(Patient seen in consultation, records incomplete; biopsies, operations and irradiation done elsewhere, or patient untreated, 262)	
Age: youngest male, 18; youngest female, 24; 20-30, 6; 30-40, 37; 40-50, 69; 50-60, 120; 60-70, 84; 70-80, 51; 80-90, 6; uncertain, 57 (some of the ages estimated)	
Sex: female 83, male 285, unrecorded 1	
Histologic report: squamous carcinoma 343; basal cell carcinoma 4; glandular carcinoma 2; endothelioma 3; sarcoma 4; lymphoma 4; osteoma 2; osteosarcoma 2; chondroma (malignant) 3; angioma (malignant) 1; leiomyoma (malignant) 1	
Treatment by laryngofissure	111
Treatment by laryngectomy	97
Treatment by irradiation	106
Patient did not return for treatment	55
	369

The results of irradiation in the foregoing series of cases were so discouraging that they were regarded as justifying advice against irradiation even when the growth is inoperable. Radiation as then applied if used in sufficient strength to get any effect seemed to hasten rather than retard a fatal termination. It should be stated, however, that in many of the cases metastases had rendered the prognosis utterly hopeless before irradiation was used.

In 1930 and the two subsequent years unquestionable evidence of better results from irradiation, especially the results from the use of radium in the hands of Dr. George E. Pfahler, convinced us that improved technic rendered irradiation advisable in all cases in which the cancer was inoperable and there was no evidence of pulmonary metastases or general carcinomatosis.

Then came the technic of irradiation with the roentgen ray devised by Coutard. The results of the application of the roentgen ray and of radium by the newer technics have been so good that we have since advised irradiation in all cases in which the cancer is inoperable, but we have left to the judgment of the radiologist in charge the choice between the use of radium, of the roentgen ray and of the two combined. In the cases reported in our records irradiation has been performed by Drs. M. C. Cameron, Russell H. Boggs, William S. Newcomet, George E. Pfahler, Henry K. Pancoast, W. Edward Chamberlain, Eugene Prendergrass, Willis F. Manges, John T. Farrell, Karl Kornblum, Leon Solis-Cohen, J. Gershon Cohen and their associates.

TABLE 2.—*Patients with Malignant Disease of the Larynx Treated with Radiation Prior to 1930*

Number of patients	106
Female	11
Male	94
Sex not recorded	1
Result on growth not recorded	13
Growth not arrested	40
Growth arrested	44
Recurrence after arrest	44
Serious complications attributable to irradiation, perichondritis, chondral necrosis, extensive sloughing, secondary reaction, delayed reaction	32

Complete data on all the patients subjected to irradiation since 1930 will be published later. During this period excellent results were obtained in a number of cases by Dr. W. Edward Chamberlain using a modified Coutard technic:

The patient receives 125 roentgens daily to each side of the larynx for twenty-five treatments, a skin portal from 7 to 10 cm. in diameter and a skin target distance of 50 cm. being used. With the factors 180 kilovolts (average), 8 milliamperes and a filtration of 2 mm. of copper plus 1 mm. of aluminum, 10.6 roentgens a minute is delivered to the skin, the time being 11.8 minutes to each side. The total dose is 3,000 roentgens or slightly more to each side.

The data shown in table 3 seem to justify our decision in favor of irradiation, at least for cases in which the cancer is inoperable.

TABLE 3.—*Data on Patients with Inoperable Malignant Disease of the Larynx Since 1930*

Number of patients	17
Female	1
Male	16
Growth not arrested	1
Growth arrested	16
Recurrence after arrest	7
Serious complications attributed to irradiation (perichondritis, chondral necrosis) recorded	1
Death within 1 year of intercurrent disease without local recurrence	7
Death within 1 year of cancer of larynx or vicinity	3
Patient living, free from recurrence after 3 years	6

The cancer in all cases was deemed inoperable because of (*a*) extent of the lesion, (*b*) adenopathy, (*c*) extrinsic location or (*d*) involvement of the posterior portion of the tongue. Considering the unfavorable character of the lesions, the results are remarkable.

In answer to the question Is the physician justified in limiting the use of irradiation to cases in which operation is contraindicated? we may say that deduction from our statistics has led us to believe that he is scarcely so justified, but we still believe that, for the present, laryngofissure should be preferred to irradiation in cases of early intrinsic cancer. We believe also

that there are cases in which total laryngectomy may still be regarded as the treatment of choice. The indications for laryngectomy have recently been very clearly stated by Schall,[1] who has also shown convincing proof of the excellent psychic and social adjustment made by most of the patients despite the mutilating and crippling character of the operation.

2. WHERE SHALL THE LINE BE DRAWN BETWEEN CASES FOR OPERATION AND CASES FOR IRRADIATION?

Fundamental to the consideration of the choice between operation and irradiation is a clear statement of what is meant by operation. There are four classes of operation, each so different as to both the operative risk and the after-condition of the patient that to take all four classes as one method for comparison with irradiation would be very misleading. We shall therefore consider (*a*) endoscopic operation, (*b*) laryngofissure, (*c*) laryngectomy and (*d*) lateral pharyngotomy.

With both endoscopic operation and laryngofissure the operative risk is negligible and the after-condition of the patient is practically normal. With both laryngectomy and lateral pharyngotomy the operative risk must be considered and the after-condition of the patient is one of mutilation and economic disability. These disadvantages do not mean that these operations are inadvisable, but the distinctions are essential to an unprejudiced consideration of the choice between operative and irradiative treatment.

Endoscopic Operation.—We have seen a number of instances in which removal of material for biopsy had so completely removed the growth that no evidence of a malignant process could be found in the mass of basal tissue removed at subsequent laryngofissure. This, however, has not led us to feel justified in endoscopic excision except in certain cases of epiglottic cancer.

Kernan [2] stated in a recent paper that he had had two cases in which the tumor had been completely removed endoscopically when tissue was taken for biopsy. In one of his cases no further procedure was done; in the other the cord was removed by laryngofissure. In neither case was there a recurrence. According to Kernan, Lynch had reported nine cases of endoscopic removal of a laryngeal carcinoma with three recurrences. Kernan's conclusion is the same as ours, that while endoscopic removal is possible it is not to be recommended.

The tip of the epiglottis is the only part of the extrinsic area that, according to our experience, is amenable to operation, and this in only one class of case.

Nowhere in the body is there a greater contrast between the early and the late stages than in the epiglottis. Though our cases of cancer in the early stage were few, they show that a small and extremely early carcinoma located at the center of the tip of the epiglottis is, for a time at least, a strictly local process so amenable to surgical treatment that direct laryngoscopic extirpation can be curative. By way of contrast, a lesion that has started or has extended slightly downward becomes one of the most fatal of all carcinomas of the larynx, because of leakage into the base of the tongue.

New [3] has on several occasions, notably in a cancer symposium at the Clinical Congress of the College of Surgeons, held in San Francisco three years ago, advocated the extirpation of small tumors of the epiglottis of low grade malignancy by surgical diathermy under suspension laryngoscopy. Tucker [4] has reported cases of epiglottic tumor in which he removed the involved epiglottis by the laryngofissure route.

In view of the foregoing facts, we may say that our clinical experience seems to indicate that in the case of cancer of the epiglottis the line between operation and irradiation is to be drawn between the small, extremely early lesion located centrally on the tip, which is an operable lesion, and a growth below the margin by origin or extension, which is of questionable operability. For all growths of the latter class irradiation is our first choice.

Laryngofissure.—For a small, early growth located within the intrinsic area in a patient otherwise free from organic disease we would not feel justified in advising anything other than laryngofissure. On the other hand, for a patient with such a growth whose life expectancy is seriously shortened by diabetes, pulmonary tuberculosis, cardiovascular disease or other organic disease we would advise irradiation. It cannot

TABLE 4.—*Cancer of the Epiglottis*

Case	Sex	Age	Location	Irradiation	Tracheotomy	Other Treatment	Result	Histologic Report	Comment
1	♂	42	Tip of epiglottis, central	.....	.....	Endoscopic	Patient living, well 9 years later	Squamous carcinoma	Before days of typing
2	♂	31	Tip of epiglottis, central	.....	.....	Endoscopic	Patient living, well 5 years later	Squamous carcinoma	Before days of typing
3	♂	54	Tip of epiglottis, left margin	For recurrence	Palliative in later stages	Endoscopic amputation; lateral pharyngotomy for recurrence	Recurrence, tongue; death 1 year later from pulmonary carcinoma	Squamous carcinoma	Before days of typing; clinically aggressive
4	♂	61	Right margin	For recurrence	Palliative in later stages	Endoscopic amputation; lateral pharyngotomy for recurrence	Recurrence, tongue; death 1½ years later from mediastinal metastases	Squamous carcinoma	Before days of typing; clinically aggressive
5	♀	42	Tip of epiglottis, central margin	.....	.....	Endoscopic amputation	Patient living, well 2 years later	Squamous carcinoma, grade 2	

1. Schall, Leroy A.: Laryngectomy, Its Place in the Treatment of Laryngeal Cancer, Pennsylvania M. J. 41:261-267 (Jan.) 1938.
2. Kernan, John Devereux: A Critique of the Treatment of Laryngeal Cancer, Laryngoscope 48:295-301 (May) 1938.
3. New, Gordon B., and Figi, Frederick A.: Treatment of Carcinoma of the Larynx, Surg., Gynec. & Obst. 62:420-423 (Feb., No. 2A) 1936.
4. Tucker, Gabriel: Cancer of the Epiglottis: Total Extirpation of the Epiglottis by the Laryngofissure Route, Tr. Am. Laryng., A. & O. 57:216-223, 1935.

be too strongly stated, however, that this preference for irradiation is not due to any operative risk; not one of the conditions mentioned, in a properly prepared patient, is a contraindication to laryngofissure. The preference is based on the fact that irradiation has now reached a degree of efficacy that renders it probable that the patient will live out his short expectancy without recurrence after irradiative arrest. The extent to which the conditions mentioned are to be regarded as contraindications to irradiation must be decided in the particular case.

Of all the cases of malignant disease of the larynx in which laryngofissure was performed prior to 1930 there are 111 that are sufficiently complete as to details to be worth analysis. These cases are divided into two groups for the purpose of determining the curability of malignant disease of the larynx by laryngofissure in cases suitable for this procedure. The question that immediately arises is Why do the operation in unsuitable cases? The reason is that when, in the days when irradiation was so disappointing, a patient with a cancer that was not ideal for laryngofissure refused to have a laryngectomy done, laryngofissure was the alternative. The responsibility was placed entirely on the patient. If, after full explanation of the increased risk of recurrence, the patient insisted on taking the increased risk rather than lose his larynx, it seemed inhuman to refuse to try to help him. A number of the patients were physicians. Under such circumstances it was deemed proper to do laryngofissure, but it would seem improper to include these cases in a group analyzed for the special purpose of determining the curability of cancer of the larynx by the laryngofissure route in suitable cases. This grouping enables the surgeon to tell future patients what the chances are in the class of case to which they belong. In no instance was laryngofissure done for advanced or extrinsic cancer when there was no hope of adequate removal. It may here be stated parenthetically that this situation is handled better today by advising patients who are not ideal subjects for laryngofissure (group A) to be treated with irradiation if they refuse consent to laryngectomy.

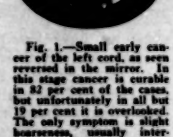

Fig. 1.—Small early cancer of the left cord, as seen reversed in the mirror. In this stage cancer is curable in 82 per cent of the cases, but unfortunately in all but 19 per cent it is overlooked. The only symptom is slight hoarseness, usually intermittent. Frequent or persistent hoarseness in an adult should be regarded as of cancerous origin until proved otherwise by proper diagnostic methods. Total laryngectomy would be a rare operation if all intrinsic laryngeal cancers were discovered in this stage.

In table 5 are included some cases (group A) in which laryngofissure was done although we had urged laryngectomy as preferable; the patient refused the latter and preferred to take the greater chance of recurrence involved in a laryngofissure for a lesion too extensive for best chances of success by this procedure. These cases are included here for completeness but should not be taken as criteria of the adequacy of laryngofissure in suitable cases. They were eliminated for this reason in a selected series of cases presented as part of the "Cancer Is Curable" symposium arranged by the late Franklin Martin.[5]

Insufficient time has elapsed for us to report finally on the results obtained in patients operated on since 1930, but it may be said that, of forty patients in whom laryngofissure was done between 1930 and 1934, thirty-four, or 85 per cent, were free from recurrence three years after operation. This series includes all patients in whom this operation was done during the aforementioned period except one who died of cardiac disease before the lapse of three years. Several of the cases would be in the "unsuitable" group if such a division as was made in the tabulation of the cases in which operation was performed prior to 1930 were made in this series.

Laryngectomy.—As between laryngectomy and irradiation we are decreasing the number of laryngectomies in proportion to the number of patients treated with irradiation. We find irradiation better for many patients for whom a very few years ago we would have advised laryngectomy.

Fig. 2.—The overhanging epiglottis concealed from mirror view until late a cancer that started on the anterior end of the left cord. Visualization of the anterior commissure in all adults is necessary if cancer is to be detected in the curable stage. This visualization can be done in every patient with the direct laryngoscope.

One class of case stands out sharply and clearly in our minds, namely that in which life expectancy is shortened by organic conditions independent of the laryngeal cancer. In such cases, it seems to us, irradiation should be used. Total laryngectomy should be reserved for the well preserved patient with a good vascular system for his years who is organically sound. There are some patients in whom no organic disease can be found who are nevertheless poor operative risks. We feel that the surgeon should beware especially of the patient who acknowledges "moderate drinking." Usually this admission means that, though perhaps rarely intoxicated, the patient drinks steadily all the time he is awake. For seventeen or eighteen hours out of each twenty-four his capillaries are dilated, his heart accelerated and his mental activity goaded. Such a patient, though not to be classed as an alcoholic addict, is a poor subject for laryngectomy. With a cancer of the larynx locally beyond the limit of laryngofissure yet still intrinsic, he will do better, on the average, with irradiation rather than with laryngectomy.

Table 6 presents data concerning the cases in which laryngectomy was done prior to 1930. In considering the rather high operative mortality one should make due allowance for the lack of the then undeveloped knowledge of diabetic control, edentulous preparation and other factors that increased the risks of major operations. Many of the operations were in cases of extensive local and metastatic lesions that would today in our opinion be classed as unsuitable for operation in the sense that operation is hopeless and irradiation hopeful. It should be noted that in only eighteen of the entire ninety-five cases the cancer was definitely intrinsic. Moreover, though degrees of malignant aggressiveness were recognized clinically,[6] pathologists had not developed the technic of

Fig. 3.—Leukoplakia of the larynx. In the larynx as elsewhere on mucosal surfaces, leukoplakia is potentially precancerous and should be extirpated.

5. Jackson, Chevalier: Cancer of the Larynx: Its Curability by Laryngofissure, Surg., Gynec. & Obst. 58:431-432 (Feb. 15) 1934.

6. Jackson, Chevalier: Peroral Endoscopy and Laryngeal Surgery, St. Louis, Laryngoscope Company, 1915. (This book is out of print but is in most libraries. The French translation, entitled "Endoscopie et chirurgie du larynx," is still obtainable from the publisher, Gaston Doin & Cie, Paris.)

preoperative determination from biopsic specimens. The aggressiveness shown by the clinical progress of many of the patients indicates that a considerable number of them would not have been operated on under our criteria of today.

TABLE 5.—*Patients with Malignant Growths of the Larynx Operated on by the Laryngofissure Route Prior to 1930*

Group A: Laryngofissure (patient's choice) in cases not strictly suited to this procedure	31
Operative deaths	2
Untraceable patients	2
Deaths from cancer of the larynx before 2 years notwithstanding subsequent laryngectomy for recurrence	6
Deaths from cancer of the larynx before 2 years notwithstanding subsequent irradiation	6
Deaths from cancer of other regions	2
Deaths from disease other than cancer before lapse of 2 years	2
Patients living and free from recurrence at end of 2 years (of 25, 47 per cent)	11
Group B: Laryngofissure in cases considered ideal for this procedure—	80
Operative deaths	1
Untraceable patients	13
Deaths from cancer of the larynx notwithstanding subsequent laryngectomy	6
Deaths from cancer of the larynx notwithstanding subsequent irradiation	4
Deaths from cancer of other regions	2
Deaths from accident or disease other than cancer prior to end of 2 year period	2
Patients living and free from recurrence after 2 years (of 62, 80 per cent)	50

Data on the seventy-eight cases in which laryngectomy was done since 1930 are not given here because they are not yet completely tabulated.

Lateral Pharyngotomy.—Any attempt to save the life of a patient otherwise doomed to death by malignant disease is not only justifiable but laudable. The percentage of success obtained by Orton [6a] and some other surgeons with extensive extirpations by the lateral route

TABLE 6.—*Patients Operated on by Total Laryngectomy Prior to 1930*

Number of patients	95
Operative deaths (within 30 days after operation, primary and secondary operations included; 9 per cent)	9
Intrinsic cancer (too extensive for laryngofissure)	10
Extrinsic cancer	77
Metastatic adenopathy	16
Pharynx or hypopharynx resected	10
Cervical esophagus resected	5
Tongue resected	3
Previous irradiation	3
Previous laryngofissure	4
Previous laryngectomy	9
Patient untraceable	11
Fatal recurrence	31
Deaths from intercurrent disease	4
Deaths from "cancer" of other viscera, without local recurrence	6
Deaths from general carcinomatosis	7
Patients free from recurrence after 2 or more years (of 75 traceable patients surviving operation, 35 per cent)	27
Patients surviving 2 years who had extrinsic cancer (27 traceable)	6
Patients surviving 2 years who had intrinsic cancer too extensive for laryngofissure (of 27 traceable, 78 per cent)	21

should encourage them to continue their efforts. There is no question as to the accessibility of the back wall of the larynx by this route, but our own early results were so discouraging and the recent results of irradiation have seemed so surprisingly good by comparison that we at present place party wall laryngeal cancers in the extrinsic class, for which irradiation is preferable to operation.

6a. Orton, J. Burns: Cancer of the Larynx: Immediate and Ultimate Results in One Hundred Operative Cases, Tr. Am. Laryngol. A., 1938.

3. WHAT IS THE BEARING OF THE DEGREE OF MALIGNANCY ON THE CHOICE BETWEEN OPERATION AND IRRADIATION?

The question of the bearing of the degree of malignancy on the choice between operation and irradiation is of fundamental importance. It can, we believe, be answered definitely enough as to operation, but the question of irradiation is so interlocked with the matter of the relative radiosensitivity of the four types of malignant process now accepted by pathologists that, for the present at least, the decision must rest with the radiologist and the pathologist consulted in the particular case.

On the operative phase of the subject we may say that our experience has convinced us that the degree of aggressiveness in the particular case is of primary importance. Many years ago one of us pointed out the great variation in degrees of malignancy and its bearing on the results,[6] but until the formulation of histologic types by Broders we had no guiding criteria. Since our histologists have systematically typed our biopsic speci-

TABLE 7.—*Laryngofissure by the Anterior Commissure Operation*

Number of patients (traceable)	34
Operative deaths	0
Recurrence within 1 year, requiring secondary laryngectomy; patient alive and well at end of 3 years	1
Recurrence treated by irradiation; death within 1 year	1
Deaths from cancer of the larynx and metastases	1
Deaths from malignant disease of other regions without local recurrence	1
Deaths from disease other than cancer, without recurrence	2
Deaths from accident	1
Patients free from recurrence at end of 3 years (79 per cent)	27

mens we have based certain decisions as to choice of treatment on their reports.[7] Most of our clinical work in recent years has been based on the grading of Dr. Frank W. Konzelmann. There may in some cases be a variation in the histologic picture in different parts of a cancer; therefore for typing it is important that the histologist have an ample specimen. In the case of large growths we believe it best to take a specimen from two or more locations; in the case of small growths it is well to remove the entire tumor.

A number of years must elapse before definite rules can be laid down, but our experience so far has led us to formulate a general outline as follows:

(*a*) We deem laryngofissure advisable for every small early growth anywhere in the intrinsic area in a patient free from general organic disease regardless of the degree of malignant aggressiveness.

(*b*) For an advanced but still intrinsic growth of grade 1 or 2 in a patient free from other organic disease we would advise laryngectomy, but we would deem irradiation preferable for cancer of grade 3 or 4.

(*c*) For intrinsic growths with glandular metastases we deem irradiation preferable regardless of grading.

(*d*) In a general way it may be said that extrinsic growths are less amenable to operation and more amenable to irradiation as compared with intrinsic lesions. We are inclined at present to regard tumors of grade 4 as more sensitive but yielding results less permanent as compared with tumors of grade 1. Grades 2 and 3 are relatively similar but less sharply contrasted.

7. Jackson, Chevalier, and Jackson, Chevalier L.: The Larynx and Its Diseases, Philadelphia, W. B. Saunders Company, 1937.

4. IS IT JUSTIFIABLE TO DO A LARYNGECTOMY FOR A SMALL MALIGNANT GROWTH IN THE ANTERIOR COMMISSURE?

It is universally accepted among surgeons that it is best, in dealing with a malignant tumor anywhere, to remove the growth with an adequate area of surrounding normal tissue without cutting into the neoplastic tissue.

The only question to be determined then, in the case of laryngeal cancer, is whether or not this can be done without extirpating the whole larynx. If the ordinary technic of laryngofissure is followed the clipping of the cartilage will certainly go right through a growth in the anterior commissure. This deplorable procedure can be entirely avoided in the case of small growths by the special anterior commissure technic which has been in use in our clinic twenty-one years.[8] Until three years ago this operation had been done for a small growth in the anterior commissure in forty-two cases, and of these thirty-four were traceable. Table 7 is a summary of the results.

Operative technic is not within the scope of this article, but there are two points that seem to require mention because they may have had a bearing on the results obtained and because, though described many years ago, they seem to have been ignored by writers and operators. One is the value of the anterior commissure operation described. The other is the rule that skin flaps should not be made and the larynx should not be even partially skeletonized in laryngofissure. The line of incision in the skin should be carried down to the cartilage layer by layer without any separate retraction. The abundance of soft tissue with vessels intact, undetached from the external perichondrium, preserves the vitality of the external perichondrium and thus prevents necrosis of the thyroid cartilage.

In answer to the question Is it justifiable to do a laryngectomy for a small malignant growth in the anterior commissure? we may say that in our opinion this procedure is perfectly justifiable and proper if the surgeon's experience leads him to believe that in performing it he is acting for the best interest of the patient. In our own work, however, since the development of the anterior commissure operation, we have found that it is not necessary to sacrifice the whole larynx in such cases. It should be stated that before doing the anterior commissure operation we make certain in each case that the growth is small. Certainty is the result of systematic preoperative examination. Furthermore, we pay particular attention to the grade of malignancy in deciding between laryngofissure and laryngectomy and between operation and irradiation.

Before doing any operation for cancer of the larynx we wish to know the extent of the growth, the location of its lower border and whether or not there is evidence of leakage out of the laryngeal box. We feel it quite unnecessary for the surgeon to be so often astonished to find at operation a large extent of subglottic growth or an enlarged lymph node over the cricothyroid membrane. Both of these conditions can easily be and, we think, should be determined by preoperative examination. This consists of three procedures: direct laryngoscopic examination, external palpation and roentgen examination of the neck.

Before deciding to do an anterior commissure operation it is necessary to know that the growth really is small. Only too often what looks in the mirror like a small growth is found on direct laryngoscopic examination to be so extensive as to exclude all hope of adequate removal by laryngofissure. To do the anterior commissure operation would certainly be disappointing; the ordinary clipping laryngofissure would be worse still. This deplorable pitfall is entirely avoidable. The exact size of the growth and the precise location of its

TABLE 8.—*Long Histories of Tumors; Triple Primary Growths*

Case	Age, First Tumor; Sex	Age, Last Tumor	Histologic Report, First Tumor	Treatment	Result	Interval, Years	Histologic Report, Second Tumor	Treatment	Result	Interval, Years	Histologic Report, Third Tumor	Treatment	Result	Comment
1	27, ♀	57	Papilloma	Excision	Apparent cure	3	Granuloma	Radium elsewhere	Apparent cure	5	Squamous carcinoma	Laryngectomy	Local, no recurrence; death from carcinoma of lung 11 years later	Total duration of history 21 years
2	About 6, ♀	49	Papilloma (?)	None	Apparent recovery	25	Edematous fibroma; papilloma	None	Apparent recovery	18	Basal carcinoma	Radium; tracheotomy	Death from carcinoma of larynx, mediastinum	History 43 years; 1 year after tracheotomy squamous carcinoma found
3	61, ♀	67	Fibro-angioma	Excision	Cure	6	Squamous carcinoma, grade 2	Coutard series	Apparent cure	5	.....	.....	.....	Larynx and voice apparently normal after 3 years; benign-malignant sequence
4	21, ♂	39	Fibroma (soft)	Excision	Cure	7	Myxoma	Excision	Cure	11	Basal carcinoma	Roentgen; radium	No recurrence after 3 years	History 28 years; carcinoma cured (3 years), irradiation
5	22, ♂	49	Papilloma	Excision	Cure	11	Fibroma (hard)	Excision	Cure	16	Sarcoma	Laryngofissure	No recurrence after 3 years	History 27 years; cure of sarcoma by laryngofissure
6	36, ♀	52	Papilloma	Excision	Cure	9	Angioma (true)	Excision	Cure	7	Cylindric cell carcinoma, larynx; adenocarcinoma, mamma; squamous carcinoma, cervix uteri	Palliative tracheotomy	Death	History 16 years; triple primary growth; one in larynx cure

8. Jackson, Chevalier: The Results of Operative Methods in the Treatment of Cancer of the Larynx, Symposium, Ann. d. mal. de l'oreille, du larynx **41**: 1221-1239, 1922.

lower border can almost always be determined by direct laryngoscopic examination of the subglottic region, and this is the only way in which the determination can be made beforehand. The best instrument for this examination is the rotating laryngoscope, though most of our work has been done with the standard anterior commissure form. In many cases what appears in the mirror to be a small growth at the anterior commissure is found to be a large subglottic lesion extending downward to the cricothyroid membrane, which always suggests possible leakage out into the soft tissues of the neck through the cricothyroid membrane or even between the cricoid and thyroid cartilages. Whether or not such leakage has occurred can often be determined by delicate palpation.

When we speak of the palpation of the larynx we do not refer to the routine, and of course necessary, surgical search for lymph nodes in the neck. We mean a careful and delicate outlining of all the laryngeal cartilages with the palpatory surface of the index finger trained to the contour of the normal. Any filling in or firmness of the normal slight depression between the thyroid and cricoid cartilages is a warning of probable leakage. The next step is to palpate every square centimeter of the cartilages for tenderness; if any tenderness is found, perichondritis is probable and any operation is contraindicated. Then a careful palpation of the region of the cricothyroid membrane is made for that little lymph node whose presence is so often a surprise at operation. It can always be detected at preoperative examination unless the neck is very fat. Of course the enlarged node found at operation may not show histologic evidence of carcinomatous metastasis, but we believe that the clinician is justified in advising against laryngofissure in most cases in which an enlarged gland has been found at preoperative examination.

The lateral roentgenogram is often valuable as a graphic representation of a laryngeal growth. It is of especial value when infiltration of the anterior subglottic region causes resistance to the direct laryngoscope. In such cases the process is beautifully delineated by the injection of a few cubic centimeters of iodized oil.[9] When this degree of infiltration is present the anterior commissure operation or any operation by the laryngofissure route is contraindicated.

5. IN VIEW OF THE LATER IMPROVEMENTS IN THE TECHNIC OF IRRADIATION IS THE SURGEON NOT JUSTIFIED IN DOING FEWER LARYNGECTOMIES?

Elapsed time is not yet available in many of our cases because of the recency of development of the Coutard technic of roentgen irradiation and of the most efficient use of radium, but our experience is sufficient to warrant the belief that the future will probably see a progressive decrease in the relative number of laryngectomies.

One obvious reason for this is that, whereas formerly the surgeon was justified in taking desperate chances by laryngectomy when the patient's general expectancy was short, because of the 100 per cent mortality without treatment, the greatly increased efficiency of irradiation indicates that laryngectomy should now be limited to good surgical subjects of good general expectancy.

9. Jackson, Chevalier L.: The Value of Roentgenography of the Neck with Special Reference to Its Use in the Diagnosis and Treatment of Laryngeal and Tracheal Obstruction, Ann. Otol., Rhin. & Laryng. 48: 951 (Dec.) 1936.

ABSTRACT OF DISCUSSION

Dr. Max Cutler, Chicago: The paper presented by the Jacksons is both valuable and comprehensive. The question of surgical intervention and irradiation in the treatment of carcinomas of the larynx involves three types of tumors: 1. Large, extensive, inoperable, extrinsic carcinomas of the larynx, which are outside the domain of surgical treatment but which, as a rule, are composed of highly undifferentiated cells and are radiosensitive, require no discussion, as they are admittedly inoperable both technically and biologically. 2. At the other extreme are small carcinomas limited to the true vocal cord, which are technically operable. When biopsy discloses an adult hornifying squamous type and the lesion has not reached the anterior commissure, surgical removal gives excellent results and is the method of choice. About 20 per cent of the lesions, however, affect the true vocal cord and are technically operable but biologically inoperable. In spite of their small size and technical operability, they are composed of undifferentiated cells which have extended along the lymphatics anteriorly to the commissure or posteriorly to the arytenoid process. Surgical removal is commonly followed by local recurrence, and the surgeon is surprised to find a local recurrence after the removal of a lesion which seemed so favorable and so definitely operable. Such lesions are radiosensitive and respond well to radiation therapy. It would be interesting if, in surgical statistics, they were segregated and an attempt made to determine whether the failures do not occur when the tumor exhibits this structure. Perhaps the 20 per cent would respond better to irradiation. There are no statistics on irradiation, however, to support this thesis. 3. There exists an intermediate type, with which a decision between surgical treatment and irradiation is difficult. The difficulty may be due to the lesion's being of borderline operability or to the patient's age or his general condition, which may contraindicate operation. The individual factors in each case must be carefully considered. These factors are histologic and clinical. Histologically, if the tumor is highly undifferentiated, it is generally radiosensitive. If it is of an adult squamous form, it is generally radioresistant. A more accurate guide to radiosensitivity, however, is the fixation or mobility of the cord. The highly undifferentiated tumors are almost without exception movable even when they are extensive. The differentiated types are nearly always fixed. When a discrepancy exists between the structure and the mobility of the parts, the latter is the more reliable sign. It is important to recognize that fixation may be due not to neoplasia alone but also to inflammation. A moderate amount of irradiation invariably results in reestablishment of mobility when fixation is due to inflammation.

Dr. Simon Jessberg, Los Angeles: In 1931 Coutard presented his results covering a ten year period of treatment of laryngeal cancer by irradiation. Previously operation was considered the only hope for cure of this disease, at least in the United States. Surgical treatment has since been replaced more and more by irradiation. Selection of type of treatment is the important problem confronting the surgeon today. The bad results of a few years back have been much lessened by improved technic in irradiation, and the indications for surgical intervention have been curtailed as a consequence. Entire removal or destruction of a cancer is essential for a cure. Whatever method is selected, the good and the bad end results must be considered. Many factors besides the actual pathologic conditions, such as the age, occupation, physical and psychic status and economic position of the patient must be considered. For example, a radio announcer aged 42 had a small grade 3 squamous cell carcinoma just above the arytenoid process. Loss of voice would have been an economic catastrophe. Laryngofissure did not offer much chance for cure. As a result of irradiation he has a good voice and is able to keep his position. After three years there has been no recurrence. Slight dryness and huskiness of the voice are his only complaints. If he had had a neoplasm of a low degree of malignancy, the irradiation required would have given a much worse end result and probably less chance of cure than surgical intervention. As the efficiency of irradiation is developed there will be fewer operations. It is only by the study of such a large series as the authors' that one can

learn to select the treatment intelligently. For a very small tumor of a high grade of malignancy in the anterior commissure, I would recommend surgical removal by laryngofissure followed by irradiation.

DR. JOSEPH C. BECK, Chicago: I am sorry Professor Coutard is not here to defend his side of the radiologic question. There should be in this discussion a "radiumologist" and a radiologist, because, as Dr. Jesberg said and as the Jacksons' paper would indicate, we have not yet reached the point where we can speak definitely. I have great hopes for the effect of proper irradiation carried out by experts on cancer, because I have seen excellent results in the treatment of certain kinds of tumors of the larynx. I would say that the results depended on whether the tumor was radiosensitive or radioresistant. However, in association with Dr. Cutler in one of the largest institutions for the care of carcinoma of the larynx, namely the Veterans Administration Facility at Hines, Ill., I have seen similar results in the case of radioresistant tumors that were really operative and yet were subjected to irradiation at the patient's request. Recently Dr. Schall painted an excellent picture of laryngectomized patients and said truly that they are not a great unhappy family, as they are so often described. Most of the people who are cured of cancer of the larynx are glad that they are permitted to live on with an educated or artificial voice. If they become dependents now, since so many people are dependents they don't have to care so much about that. Most laryngectomized patients do become dependents, according to my experience. They are not productive, especially if they are salesmen. I am definitely at variance with Professor Coutard about making the fixed cord which is immovable from inflammation move again. I have not seen this happen. The inflammation is chronic and is not, according to radiologists, affected by irradiation. I do not think it should be considered in the prognosis. Dr. Jesberg also was definitely wrong when he said that for a tumor which was very sensitive to irradiation he would operate. I have seen the worst kind of results from such a procedure, namely rapid spread not only into the glands of the neck but throughout the system. The surgeon should be much more alert to the pathologist's decision as to what type tumor he is treating.

DR. CHEVALIER L. JACKSON, Philadelphia: I appreciated very much hearing Dr. Cutler's discussion. Dr. Jesberg and Dr. Beck have both spoken about lesions of the anterior commissure. We feel that it is much more important to consider the histologic picture with such lesions than with lesions in the middle third of the cord. It is with lesions of the anterior commissure that the final decision will depend on the histologic picture. The highly malignant lesion will certainly not be suitable for operation, but the lesion of low grade malignancy will be operable, and very successfully so, even if it does involve the anterior commissure. One of our tables lists thirty-four cases of lesions of the anterior commissure in which laryngofissure was done by the Chevalier Jackson anterior commissure technic. In this operation introduced by Dr. Chevalier Jackson in 1922, we divide the thyroid cartilage from the outside with a saw instead of clipping through the lesion with shears. Of our series of thirty-four patients, twenty-seven, or 79 per cent, were free from recurrence for three years. The last thing I wish to say is with regard to movement of the cord, a point which Dr. Beck mentioned. I have frequently seen irradiation restore the motion of a fixed cord whether the immovability was due to neoplastic infiltration or to inflammation.

Muscle Physiology.—Several observations by Bernard foreshadow the intensive work of the last decade in the field of muscle physiology. He found that blood leaving a contracted muscle is more venous than that leaving the same muscle at rest, i. e., although a living muscle always consumes oxygen, the consumption is increased during activity; and there is an accompanying increase in heat production. But if the motor nerve to the muscle is cut, there is very little oxygen consumed, even less than in a normal inactive muscle. This shows that, while the constant nerve impulses which keep the muscle in a state of semiactivity which we call tonus cause the muscle to consume a certain amount of oxygen, active contraction causes it to consume still more.—Olmsted, J. M. D.: Claude Bernard, Physiologist, New York, Harper & Bros., 1938.

NEW STUDIES IN SURGICAL BACTERIOLOGY AND SURGICAL TECHNIC

WITH SPECIAL REFERENCE TO DISINFECTION OF THE SKIN

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Surgical technic has from the first suffered the lack of a quantitative test for degree of disinfection of the skin. It has been impossible to determine the precise effect of any hand disinfectant or stronger cutaneous germicide because the size of the bacterial flora could not be measured either before or after employment of the agent. In consequence there is a tremendous literature on the subject but little unanimity of opinion or uniformity in practice.

A NEW QUANTITATIVE METHOD OF STUDYING THE BACTERIA OF THE SKIN

If a large number of basins of sterile water are prepared and the hands and forearms are scrubbed with soap and brush in a standard manner for exactly one minute in each basin, one after another, the washings will be found to contain a slowly diminishing number of bacteria. The cumulative totals plotted against time produce a curve. This is found to be a regular, logarithmic curve that is constant. From a study of this curve the size of the flora of the scrubbed area can be determined accurately.

Furthermore, by employing two such series of basins and plotting the two curves independently, the germicidal effect of any disinfectant used in the interval may be studied quantitatively. This introduces a new scale of germicidal value—the measured action of germicides in reducing the bacterial flora of skin as compared with the effect of scrubbing in a standard manner. The experiment shown in the accompanying table and chart will serve as an example to illustrate more fully application of the test.

The method also permits a much more accurate study of the bacterial flora of the skin than has been possible heretofore, lending itself admirably to investigation of the size and location of the bacterial flora as well as qualitative studies of the flora at various stages of degermation, the mechanism of degermation and reestablishment of the usual flora after degermation.[1]

With generous help from colleagues and various groups of students, I have applied this new quantitative method to a reexamination of certain aspects of surgical bacteriology and surgical technic. The study has extended over a period of several years. Some of our results and conclusions are reported briefly herewith. A full description of the test and a more detailed account of the work on which the following conclusions are based will be published elsewhere.

A SUMMARY OF RESULTS AND CONCLUSIONS

The bacterial flora of normal skin is found to be composed of "transients" and "residents."

Transients may be present in enormous numbers at times, but as a rule relatively few are present on grossly clean hands or on clean protected (unexposed) skin.

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1. The word degermation is used here in preference to disinfection to designate reduction in the total number of bacteria present, irrespective of whether the organisms are or are not pathogenic.

Transients, which are collected from extraneous sources, are comparatively easy to remove or kill. That is not true of the basic flora. Hence tests of germicidal power, which utilize test bacteria placed on skin and exposed subsequently to some disinfectant, may give thoroughly misleading results.

The size of the basic (or resident) flora at any given time is the net result of factors constantly acting, some to increase, others to lessen, the bacterial "population." Increase results largely from multiplication of resident organisms already present. Decrease is brought about by washing, friction of clothing and influences deleterious to bacterial life. Certain transients change their status and become residents, but this process seems to be a slow one and how it takes place is not clear. But the fact that it does happen makes it important to disinfect contaminated hands without undue delay.

The resident flora of my hands and arms, under conditions of ordinary life, tends to strike an equilibrium at about eight million micro-organisms.

This flora is located not in the skin nor to any extent in glands or hair follicles but on the skin.

The basic flora includes some pathogenic germs. If hands are in frequent contact with contaminated objects a dangerously large proportion of the resident bacteria may be pathogens. In such a case it is almost impossible to disinfect the hands. In this hitherto unsuspected manner a person may become a carrier of virulent organisms.

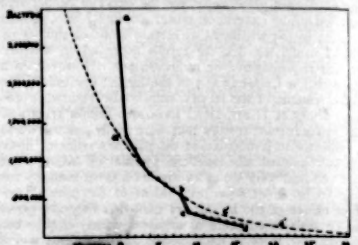
Results of an Experiment Done to Determine the Effect of Washing in 78.5 Per Cent (by Weight) Alcohol on the Bacterial Flora of Hands and Arms

Basin	Scrubbing Time, Minutes	Total Bacterial Count for Basin, Organisms	Cumulative Totals Washed Off, Organisms	Actual Totals or Size of Flora Left, Organisms
				2,822,370 (a)
1	1	1,497,440	2,272,370	1,224,930
2	1	348,270	774,930	1,156,610
3	1	197,980	608,610	980,630
4	1	132,770	410,630	827,980
5	1	66,300	277,980	761,580
6	1	74,400	211,580	687,180
7	1	74,400	137,180	612,780
8	1	62,730	62,730	550,050 (b)
At this point hands and arms dried in the air and then washed without friction in 78.5 per cent (by weight) alcohol for exactly sixty seconds. Scrubbing resumed immediately. Temperature of alcohol 25 C.				
				318,595 (c)
9	1	30,070	170,595	288,525
10	1	21,940	140,525	256,685
11	1	22,655	116,685	234,030
12	1	25,450	94,030	208,630
13	1	24,200	68,630	181,250
14	1	17,720	44,250	163,530
15	1	23,530	23,530	140,000 (d)

(a) Total number of bacteria on the hands and arms at the beginning of the experiment; (b) after eight minutes of scrubbing; (c) after application of the germicide; (d) after the second period of scrubbing; b and d are arrived at by mathematical projection of the curves produced.

Scrubbing with brush, soap and warm water, as practiced by me, reduces this basic flora at a constant rate. Irrespective of the initial size of the flora, the number of bacteria is reduced by approximately one half with each six minutes of scrubbing. The kind of soap used makes no difference. Variations in the temperature of the water do not influence the rate appreciably. The amount of vigor used in brushing is a very important factor, however. Sterile water has been found to possess no advantage over ordinary tap water in reducing this flora.

Ethyl alcohol has a very narrow range of effective germicidal concentrations. The optimum germicidal strength, both in vitro and on the skin, is 70 per cent by weight (not by volume as ordinarily prepared).[2] At precisely this concentration, alcohol is more effective than any other hand disinfectant now in general use. Each minute spent in this particular solution (at 25 C.) has a degerming effect equivalent to about six and one-



Bacteriologic effect of washing the hands and arms in 78.5 per cent (by weight) alcohol for one minute. The broken line *a'd'* represents the rate at which the basic flora of the author's hands and arms always are degermed by scrubbing in a standard manner. The solid line *ab* indicates the effect of scrubbing eight minutes, while *cd* shows the result of scrubbing seven minutes in the second series of basins. The initial deviation, *aa'*, from the broken line is due to contaminating (transient) bacteria purposely placed on the hands at the outset. So, of the initial number of 2,822,000 organisms, only 1,350,000 were "resident." This relatively small flora was due to the hands and arms having been well degermed two days previously and the usual flora not yet having been reestablished. The second deviation, *bc*, was due to use of the alcohol. It is clear that, by scrubbing 4.2 minutes, *bc'*, the same effect (as *bc*) could have been obtained. *cd* is equivalent to *c'd'*. Hence each minute spent in this particular solution of alcohol may be said to be equivalent to 4.2 minutes of scrubbing.

half minutes of scrubbing. This effect may be increased considerably by friction, i. e. by rubbing with gauze or a rough wash cloth. Even slight variations from that particular concentration of alcohol results in marked decrease of bactericidal power. Sixty per cent by weight (about 70 per cent by volume) is almost worthless.

Mercury bichloride solutions do not reduce the flora on the skin appreciably. Paradoxically, a sterile cutaneous surface may be produced. This phenomenon is due, we believe, to the formation of a transparent "film" on the skin under which the bacteria are imprisoned. There conditions are so suitable to life that multiplication takes place, the existing bacterial flora doubling every fifty minutes. The "film" may be broken up, either with an alkaline sulfide or by prolonged friction, whereupon the bacteria are released uninjured.

The same phenomenon is observed when potassium mercuric iodide (biniodide) or Harrington's solution is used. Neither of these is a true germicide when applied to the skin. When tested, these agents should always be followed by an alkaline sulfide.

Kelly's method of hand disinfection (with hot saturated solutions of potassium permanganate and oxalic acid) is very effective. The procedure requires from two and one-half to more than five minutes, depending

2. It is important to differentiate clearly in solutions of alcohol between per cent by volume and per cent by weight. Per cent by weight solutions are exact and invariable. Per cent by volume solutions, as ordinarily prepared, are inexact and undependable owing to three uncontrolled variables—temperature expansion, specific gravity and reaction concentration. Thus 70 per cent alcohol by weight (always the same) is the equivalent of 76.6 per cent by volume if the latter is prepared at 15 C. but is the equivalent of 80.5 per cent by volume if the volumetric measurements are made at 25 C. Accurate weight per cent solutions can be prepared from commercial (95 per cent) alcohol with the help of hydrometer, thermometer and appropriate tables. The following formula will give a solution approximately 70 per cent by weight: 95 per cent alcohol at 25 C. 815 cc., plus cold distilled water sufficient to make 1,000 cc.

on the temperature of the solutions. The total degerming effects are equivalent to between twenty and thirty minutes of scrubbing.

The lime and soda method is also very effective. When rubbing with the paste was continued for four minutes the reduction of flora was as great as could be accomplished by twenty minutes of scrubbing.

Saponated solution of cresol, though a relatively strong germicide against test organisms in vitro (a claim which we have verified), proved worthless as a disinfectant of the skin; 1:400 and 1:200 solutions, used without friction at 25 C., do not reduce the flora appreciably. In 1:100 solution, which causes some burning and anesthesia of skin, the flora is reduced about as rapidly (or as slowly) as scrubbing.

A search for a more nearly ideal hand disinfectant has resulted in the production of a new germicidal mixture which seems to possess certain advantages over any of the agents now in general use. It is powerfully germicidal, each minute spent in it (at 25 C., without friction) being equivalent to more than eleven minutes of scrubbing. It is simple and pleasant to use. It does not irritate or injure the skin. It is more stable than simple ethyl alcohol solutions. This germicide consists of ethyl alcohol 50 parts by weight, normal propyl alcohol 20 parts by weight and water 30 parts by weight. It may be prepared as follows: ethyl alcohol (95 per cent) 675 cc., pure n-propyl alcohol 250 cc., distilled water 250 cc., all measurements being made at 25 C.

By rational and conscientious use of the most effective means, the bacterial flora of the hands can be reduced to a relatively low figure but practically never to zero. The remaining organisms may, and on surgeons' hands often do, include pathogens. Hence the necessity for wearing gloves when operating.

Beneath rubber gloves, however, the bacteria remaining on the skin multiply rapidly, their number doubling every forty minutes if the hands are dry or every fifty minutes if the gloves have been put on wet. If gloves are worn long enough, the cutaneous flora may increase until it exceeds by far the ordinary flora. I found that on one occasion the bacterial count of my hands and arms had increased to more than 31,000,000. If pathogens are present they participate proportionately in this multiplication. No means has yet been found to prevent or delay this increase. These extraordinary bacterial "populations," we find, cannot be reduced any more rapidly than the ordinary. This phenomenon of rapid increase of cutaneous flora does not occur under cotton gloves or ordinary clothing.

The basic flora of protected skin per unit area is no smaller than that of the hands.

Ether, a representative of a group of the stronger germicides thought to disinfect skin chiefly by means of detergent properties, when subjected to our quantitative test proved utterly powerless to reduce the basic flora of clean skin.

Freshly prepared U. S. P. tincture of iodine (7 per cent), applied to grease-free skin and followed by an antidote, came nearer to full sterilization of the epidermis than any other germicide tested. U. S. P. "half-strength" tincture of iodine (3.5 per cent) proved far less effective, reducing the flora irregularly, but on the average by less than half. Two per cent iodine in 70 per cent (by weight) alcohol was much more effective, lowering the bacterial count to nearly 18 per cent of its original size. On drying, the germicidal action of iodine practically ceases. The 2 per cent iodine in 70 per cent alcohol solution has certain important advantages: even spread, slow evaporation, nonirritation, and contributory bactericidal effect of the 70 per cent alcohol.

Mercurochrome, a prominent representative of a large group of the newer germicides, the organic compounds of mercury or silver, was tested. From bacteriostatic and bacteriocidal standpoints, mercurochrome was found to be similar in many respects to the inorganic salts of mercury. If no antidote is used, an exaggerated idea of its germicidal power is obtained. Aqueous solutions of mercurochrome on the skin may produce a nearly germ-free surface, but subsequent use of 10 per cent ammonium sulfide will show that the bacterial flora has been reduced little if any. Scott's alcohol-acetone-2 per cent solution of mercurochrome, applied liberally and allowed to dry slowly, reduced the bacteria of the skin to about one-third their original number. This whole group of germicides, the organic compounds of heavy metals, needs to be reinvestigated, appropriate antidotes being used.

After the skin has been degermed, reestablishment of the usual flora proceeds slowly (except under rubber gloves), apparently at a rate represented by a sigmoid curve. When the hands and arms have been thoroughly "disinfected," the number of bacteria being reduced, say, to 200,000, full reestablishment of the ordinary flora may be expected in about a week.

Parallel studies of our quantitative test on the one hand and the commonly used scraping and rubbing tests for cutaneous contamination on the other show that both of those time-honored methods become increasingly untrustworthy as the flora of the skin diminishes.

PRACTICAL RECOMMENDATIONS

The following principles and procedures are based on our experimental studies. Before recommending them, however, we subjected them critically to a prolonged test of clinical application, with highly satisfactory results.

Preoperative Preparation of Hands.—1. The hands are scrubbed with soap, a good brush and warm water for at least seven minutes. This will usually suffice to remove gross dirt, transient bacteria and fats, and incidentally about half the basic flora. The nails should be short and clean at the start.

2. The resident flora is much more effectively attacked by germicides than by scrubbing. We recommend ethyl alcohol, 70 per cent by weight, or the mixture of alcohols described. These solutions should be freshly and accurately prepared. Before entering the alcohol basin, the hands and arms should be dried thoroughly with a sterile towel, for to carry water into the alcohol will weaken the solution and markedly lessen its germicidal power. In the alcohol basin the skin should be rubbed firmly with sterile gauze or a washcloth.

The time spent in these solutions is of the utmost importance. We suggest that ethyl alcohol be used with friction for three minutes by the clock or the mixture of alcohols for two. This may be expected to reduce the original flora from 50 per cent (result of scrubbing) to something less than 2 per cent.

The occasional operator will increase the margin of safety by washing also in a 1:1,000 bichloride or 1:500 biniodide solution for one minute. The mercuric salt should follow, never precede, the alcohol, for the film formed by the mercurial is impervious to alcohol as well

as to bacteria. Bichloride, biniodide and Harrington's solutions are not recommended, however, for hands that must be disinfected frequently.

3. Gloves and gown are put on. An ungloved hand inevitably increases the risk of wound infection. In operating rooms where expense is not a major consideration, where only perfect (unpatched) gloves are used and where preparation of gloves are in highly competent hands, we have shown dry gloves to be preferable, and even safer. Elsewhere wet gloves will probably have a larger margin of safety. In lieu of gloves, the operator should wash his hands in bichloride or biniodide of mercury.

4. Between operations the hands should be washed in a germicidal solution in order to counteract the increase of cutaneous bacteria which has taken place beneath the gloves. A useful rule is one minute in alcohol for every hour that the gloves have been worn.

Preparation of the Field of Operation.—Preparation of the patient's skin the day before operation by wrapping the part in sterile towels is psychologically harmful and bacteriologically useless. Before coming to the operating room the patient should receive a bath, however, the site of operation being especially well washed with soap and water to remove dirt, most of the fats and any transient bacteria. If, as in the presence of a wound, this is not possible, a chemical detergent should be used.

Immediately before operation the site of incision should be washed with gauze and 70 per cent (by weight) alcohol or the suggested mixture of alcohols. It should be allowed to dry slowly, for in disinfection time is a factor that cannot be ignored.

This is to be followed by one of the stronger germicides. U. S. P. tincture of iodine (7 per cent) is extremely effective but in many cases too strong a solution to be tolerated or used safely. We recommend weaker solutions of iodine dissolved in 70 per cent (by weight) alcohol. After application, iodine solutions should be permitted to dry slowly. Washing a dried coat of iodine off the skin with alcohol increases rather than diminishes the total germicidal effect.

As an alternative to the iodine technic, the field of operation may be painted with Scott's alcohol-acetone-2 per cent solution of mercurochrome, or an irregular area such as that of the hand or foot may be soaked for a minute in 1:500 biniodide solution. In either case an aseptic surface will be produced. But the line of incision must first be specially prepared (disinfected), else the knife will necessarily pass through germ-laden skin beneath the "film." One way to do this is to rub the site of incision for two or three minutes firmly with gauze and 70 per cent (by weight) alcohol or our mixture of alcohols.

Disinfection of Contaminated Hands.—Ordinary hands, contaminated by contact with infectious patients or materials, are not difficult to disinfect. Saponated solution of cresol, however, is almost useless for the purpose, and solutions of bichloride or biniodide of mercury may be actually dangerous. We recommend the following as a simple dependable method for routine use:

1. The hands should be washed as soon as possible with soap and running water for at least thirty seconds. This may be expected to remove about nine tenths of the contaminating organisms. If there is pus, blood, secretion from the wound, saliva, mucus or other infectious material on the hands, washing should be continued for a minute or more, perhaps with the use of a brush.

2. The hands should be well dried on an individual towel.

3. Every part of the hands should be wet with 70 per cent (by weight) alcohol. A few cubic centimeters dripped on the hands will suffice. The alcohol should not be wiped or shaken off but the skin should be allowed to dry by evaporation. It is the germicidal action that is required, and that takes time.

909 University Parkway.

PHOTOGRAPHY OF THE UTERINE CERVIX

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The present knowledge of medicine must be handed on to students, and teaching can be accomplished more advantageously with a combination of auditory and visual methods than by either method alone. Photographs are also of value to the practitioner as office records. The physician may wish to know what the exact appearance of the cervix, or any other lesion, was six months previously.

The patient also appreciates knowing why the cervix or other inaccessible part of the body needs repair or other treatment. She has no idea of the appearance of the cervix because she has never seen it and has never been aware of any sensation from it, since there are no sensory nerve endings in it. No other part of the body undergoes as much injury or is so neglected after being injured. The cervix is also the sharp junction of two distinctly different types of epithelium, which means that it is constantly subject to change due to the erosion and healing processes going on in such an area. Other parts of the body may lend themselves just as readily as the cervix to photographic records. Portrayal of operative procedures and photographs of pathologic tissue in situ are both valuable and should be preserved not only for records but for use in teaching.

In the field of gynecology and obstetrics, teaching material is somewhat more difficult to find than in other branches of medicine; therefore, every effort possible must be made to record by accurate drawings and photographs examples of pathologic lesions and normal tissue.

Not only must this material be recorded, but it must be done in such a way that it is easily available for teaching purposes. The records must be where they can be readily shown and they must be shown repeatedly.

Students spend long hours in clinics attempting to see examples of lesions about which they have read, but most find by the time their course is over that there are many important lesions which they have not had an opportunity to see. By making accurate colored photographs over a period of years of the many differ-

Read before the Section on Obstetrics and Gynecology at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 16, 1938.

ent cases, one can supplement the reading course by actual photographs in color.

With these points in mind, I have for the past several years been attempting to devise a means whereby good photographs could be made with the least possible expenditure of time and with the least discomfort to the patient. The various devices assembled here are by no means perfect, but this paper is published with the hope that others interested will contribute valuable suggestions.

Many difficulties were encountered in an attempt to photograph as small an object as the cervix at close range. The usual tripod was found to be too cumbersome; a single shaft on a heavy round metal base has proved much easier to handle. It can be placed close

Fig. 1.—Camera in position for focusing. *A*, Leica camera; *B*, Speed-o-Copy (D. Paul Shull, manufacturer, Los Angeles) with three extension tubes; *C*, 90 mm. f/4.5 lens; *D*, two "Good-Lites"; *E*, microscope stage attached above to base of Speed-o-Copy and below to *F*, Leica universal ball joint; *G*, rheostat cords; *H*, expansion screw allowing inner rod to be raised and lowered.

to the examining table and moved easily forward or backward to the approximate focal distance. This rod is so constructed as to allow the camera to be either raised or lowered. A small candid camera lends itself to quick work, but any other camera may be used. Up to the present time, the best colored film is available only in 35 mm. size, and since it gives a very accurate colored picture the small candid camera seemed best to start with. The camera is not permanently attached to the assembly of the various devices but may be used as a candid camera merely by unscrewing it from the Speed-o-Copy attachment and replacing the usual lens. In other words, the use of the camera is not restricted to the office or clinic but is available for other purposes.

Another difficulty was the distance from object to camera, and this was overcome most readily by using a Speed-o-Copy attachment with three extension tubes and a 90 mm. f/4.5 telephoto lens. With the use of this attachment, extension tubes and telephoto lens, the image on the colored film is approximately life size and the end of the lens is kept 18 cm. from the cervix. This distance allows the lens to escape touching the speculum. The Speed-o-Copy attachment has a ground glass for focusing, and over this is a detachable magnifying lens which makes possible a very accurate focus. When the cervix is in sharp focus the ground glass and lens swing up, the camera lifts up into the position formerly held by the ground glass, and it is locked there while the exposure is made (figs. 1 and 2).

Fig. 2.—Camera in position for making picture.

A third difficulty was proper illumination of the cervix. Various speculums with lights built inside were tried, but none were bright enough and most of them caused discomfort. Two "Good-Lites" are now used, one on either side of the lens, and they are fastened to the base of the Speed-o-Copy attachment by small universal joints. These lights are commonly used by otolaryngologists on a headband. The rheostats for the lights are attached to the standard and help to lend weight.

Fig. 3.—Bivalve black nickel vaginal speculum and piece of thin rubber Penrose tube.

Another problem was to obtain an accurate focus. In order to get this quickly the whole outfit was attached by a rigid tubular post to a microscope stage.

By turning the screw of this stage, one moves the camera and all its attachments forward or backward in the same plane. The entire assembly is attached to the standard by a large ball universal joint which allows it to be pointed in any direction the vaginal canal may assume. Once the mechanism is placed at the proper height and directed properly, the microscope stage permits a quick accurate focus.

Getting proper exposure of the cervix and an aperture through which a photograph could be taken was another perplexity. The comfort of the patient is of great importance and must be considered, for she must wait until the camera is adjusted properly. A large-sized bivalve speculum was found to be the most comfortable and still permit an aperture large enough; made of black nickel, it gives very little reflection. In order to hold the lateral vaginal walls back, a piece of large-sized Penrose rubber drain may be pulled on to the speculum before it is inserted. As the blades are spread apart, the tension caused by stretching the rubber keeps the vaginal walls perpendicular (figs. 3, 4 and 5).

Kodachrome A film is used and the films are mounted as lantern slides. The slides, 3¼ by 4¼ inches (8.2 by 10.8 cm.), are made for regular stereopticons because much more light is available in them; however, the small slide, 1 by 1½ inches (2.5 by 3.8 cm.), may be used. Kodachrome film has no grain in it and with a 1,000 watt lamp and a 6½ inch (16.5 cm.) lens on a projector, a small 35 mm. picture can be made approximately 10 feet square at 40 feet with no loss of fine detail.

Black and white film can also be used, and from these negatives enlargements are made. In order to increase the depth of focus, the lens is closed to f/9 or smaller, and it has been found that an exposure of four

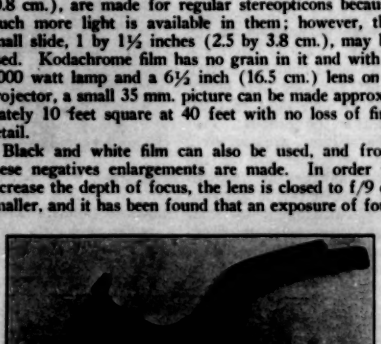

Fig. 4.—Rubber tubing drawn over blades of speculum and ready for insertion.

fifths of a second at f/9 has been satisfactory in most of our work. One light may be a little less bright, thus overcoming some of the difficulty in photographing a spherical object. This, however, is not necessary when Kodachrome film is used, since the color itself gives the impression of depth in the photograph. Photographs can be made in from five to ten minutes with the use of this mechanism and, as every one knows, the saving of time is desirable during a busy office or clinic period.

This assembly has not been patented and will not be; however, the various parts of which it is composed are patented articles. The mechanism is being assembled by the General Scientific Instrument Company of Chicago, and I do not and will not receive any remuneration from it. It is only hoped that others will be stimulated to make good photographs, not of the cervix alone but of lesions in other organs, and will report their work at some future date.

636 Church Street.

ABSTRACT OF DISCUSSION

DR. J. M. BRUNER, Des Moines, Iowa: I should like to express my appreciation of Dr. Galloway's paper. Heretofore lesions of the cervix have been illustrated by drawings, which

Fig. 5.—As the speculum blades are separated the tension caused by stretching the rubber keeps the lateral vaginal walls perpendicular.

were often inaccurate. It is surprising that no good photographs of the cervix are to be found in textbooks. Years ago my attention was called to this fact by an article by Mr. Ralph P. Creer of Chicago (Photography of the Cervix Uteri, *Journal of the Biological Photographic Association*, December 1935). At the time I was conducting one of the gynecology clinics of the Broadlawns County Hospital at Des Moines, Iowa. Many interesting lesions of the cervix were being seen, and it seemed desirable to make a photographic record of these lesions before and after treatment. For this purpose I designed a special tubular speculum which provides unexcelled exposure of the cervix for photography. The lights are placed within the speculum on one side only, in order to produce the maximum degree of modeling in the cervix. The camera used is a Leica with sliding ground-glass attachment. The technic for this work was published in an article by Dr. L. E. Rosebrook and myself in the *Journal of the Biological Photographic Association*, September 1936, and in the *American Journal of Obstetrics and Gynecology*, December 1937. Color photographs of the cervix make beautiful lantern slides. Such photographs, however, cannot be reproduced for publication. For this purpose black and white negatives are essential. Good black and white negatives are much more difficult to obtain because they lack the third dimensional properties of color film. They do, however, make excellent illustrations for textbooks and scientific articles.

No Life Without Proteins.—Proteins represent the stream of life. They make up the vital part of that essential jelly material of the living cell—the protoplasm. The beginning of life on this and perhaps a few other fortunate planets must have been associated with the formation of proteins. This word means "to take first place," for there is no life without proteins. The name was the lucky choice of Mulder, one of the first investigators.—Furnas, C. C., and Furnas, S. M.: Man, Bread and Destiny, New York, Reynal & Hitchcock, 1937.

REOPENING LIGATED TUBES BY UTERINE INSUFFLATION WITH CARBON DIOXIDE

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Surgical sterilization by tubal ligation has a disquieting effect on some patients, leaving them unreconciled to the artificially induced sterility. Certain circumstances besides remorse and psychic depression occasionally arise after surgical sterilization which make the retrieval of the forfeited fertility eminently desirable. Such is the loss of an only child or more rarely the loss of two or three children or marriage to a second husband with whom children are keenly desired. The loss of fertility is particularly felt by women whose health is unexpectedly improved or wholly restored.

To remove the obstacle to conception, another laparotomy must be considered. But since this involves the risk of a surgical operation, postoperative convalescence and possibly also an economic burden, it is not particularly agreeable to the patient nor is it readily assented to by the husband.

For such women any method that might accomplish the reopening of the tubes without necessarily resorting to a laparotomy would appear to meet a real need. In uterotubal insufflation a nonoperative method has been found which offers this possibility. Its application for this purpose is supported by a number of successful therapeutic results following uterotubal insufflation in cases of involuntary sterility due to strictures of the fallopian tubes and peritubal adhesions. In these cases pregnancy has occurred within one or several months after treatment. The pressure to which the carbon dioxide is raised in these strictured tubes often reaches

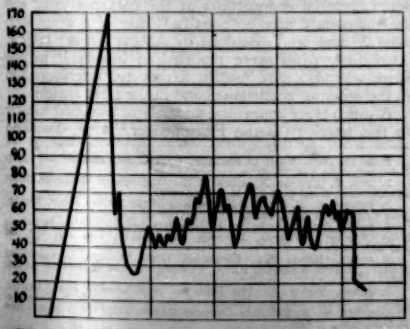

Chart 1.—Tubal insufflation Oct. 1, 1931. Initial rise of pressure to 170 mm. of mercury; sharp drop at point where the obstruction was relieved to 60 mm. and 25 mm., after which strong tubal contraction waves were recorded typical of normally patent fallopian tubes.

200 mm. of mercury before patency is established. By widening the opening in the tubal lumen, the impediment to conception is removed.

An accidental observation made in 1931 on a patient who had been sterilized by tubal ligation gave the clue to the possible therapeutic use of carbon dioxide insufflation after ligation of the tubes. D. S. had an only child who had been delivered by cesarean section, at which time the fallopian tubes were tied and cut and the severed lumens were peritonealized. Contemplating remarriage, she wanted to know whether she could possibly conceive again. During tubal insufflation the pressure rose to 170 mm. of mercury and suddenly dropped to 60 mm., after which rhythmic contractions and relaxations were recorded on the kymograph drum (chart 1). There were typical shoulder pains, and a subphrenic pneumoperitoneum was demonstrable fluoroscopically. She became pregnant two years after this examination. Several years later a uterine insufflation showed the tubes to be open within normal limits and functioning (chart 2).

I did not have occasion to reopen ligated tubes by this method until 1937, when this question arose in connection with a study of the Head zones and distri-

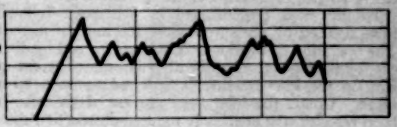

Chart 2.—Tubal insufflation in same patient Oct. 11, 1937, showing tubal patency at normal pressure levels.

bution of pain coincident to tubal distention which was produced by uterine insufflation with carbon dioxide.[1] The study was made in young women who had recently been sterilized by tubal ligation. The ligatures had been intentionally placed at different portions of the fallopian tubes. It was found that when the pressure exceeded 120 mm. of mercury there was a sudden sharp drop, indicating that the tube or tubes yielded at the ligated points. The carbon dioxide passed into the peritoneal cavity and the tubes exhibited rhythmic contractions. Since the sterilization was indicated on medical grounds, these patients were duly instructed in contraception.

Based on five similar experiences, it seems justifiable to say that one or several of the women whose tubes were reopened could become pregnant again if they chose to. This possibility obviously puts a different psychologic aspect on tubal ligation in the case of women who hope for a return of reproductive function. The assurance of retrievability enabled three patients during the past year to go through the operation with an untroubled mind.

As to the manner in which insufflation opens up ligated tubes, it has been noted that whether the tubes are previously crushed, as in the Madlener operation, or not crushed, as in the Pomeroy method, the operations which are preferred by most surgeons, the pathologic change induced is localized at the point of ligation. Observations on the local condition following the operation are fairly uniform. A small fibrous band connects the severed end of the tubal loop, or fine adhesions bind them to adjacent viscera.[2] The stricture, though complete, is limited to a very thin segment of the endosalpinx and tubal serosa in contrast to pathologic strictures, which as a rule occupy more extensive portions of the lumen of the tube.

As fallopian tubes that have been ligated were normal previous to the sterilizing operation, they remain normal except at the point of ligation. This renders the surgical stricture vulnerable to intratubal pressure.

1. Rubin, I. C.: Study of Pelvic Pain and Head Zones Reproduced by Artificial Distention of Ligated Fallopian Tubes, J. Mount Sinai Hosp., to be published.
2. Bishop, Eliot: Operative Methods of Sterilization in the Female, Am. J. Obst. & Gynec. 34: 505 (Sept.) 1937.

When it becomes desirable to reestablish tubal patency after the Madlener or Pomeroy operation, the same technic of uterotubal insufflation can be adopted as in testing for tubal patency in cases of involuntary sterility. When I originally suggested this method to test the security of tubal ligation, I did not realize that higher pressures than those required for normal patency might overcome the artificially induced obstruction. Later experience has shown that this is possible. In this connection it is not altogether strange that pregnancy should follow the opening of otherwise normal tubes which have been ligated and severed at different points for purposes of sterilization, since pregnancy has been known to occur in cases in which diseased tubes were resected at practically any point of their entire length, including the uterine insertion.

Patency was reestablished in five cases following tubal ligation by pressures below 160 mm. of mercury. The operation of ligation had been performed by different gynecologists. Apparently the more recent the ligation the less pressure is required to open up the tubes. Unless the interstitial portion of the tube has been resected, the artificially induced obstruction should yield to insufflation at a pressure of 200 mm. of mercury or less. In experienced hands the pressure level may be increased to 250 mm. of mercury. The latter, however, is recommended only as a therapeutic measure for the specific purpose of effecting a reopening of ligated tubes. If the insufflation fails on the first trial to open the tubes, it can be conveniently repeated at suitable intervals. Should pregnancy not soon take place though tubal patency has been restored, the patient has the reassurance that the mechanical closure is no longer responsible for the sterility.

The question naturally arises whether fluid mediums may not be used instead of carbon dioxide to reopen ligated tubes. If iodized poppyseed oil or other iodized oils are considered there are several disadvantages: 1. Retention of oil at or near the tight opening may induce foreign body reaction and organic obliteration.[3] 2. The pressure control is not as accurate as when carbon dioxide is used. 3. The injection of iodized oils cannot be repeated as conveniently and safely as insufflation with carbon dioxide. The latter has the great advantage of being used under a constant rate of flow, regulated by a reduction valve, the gas being promptly resorbed and leaving no residue.

If one prefers to employ fluids it is advisable to use skiodan, hippuran or any of the quickly resorbable crystalloids of iodine, which can be injected with the aid of the kymographic insufflation apparatus. I have not used these radiopaque mediums for this purpose because the data with regard to the points of ligation, the only point to be adduced by opaque mediums, were already available. If such data should not be at hand, one could locate the obstructions by the insufflation method.[4]

As to the technic, it is only necessary to mention that the flow of carbon dioxide is regulated at the rate of 1 cc. per second or slower, the pressure rise and pain reaction being observed if any are present. About 100 cc. of gas is adequate and the procedure requires from two to three minutes at the first trial.

911 Park Avenue.

3. Rubin, I. C.: Retention of Lipiodol in Fallopian Tubes, with Special Reference to Occlusive Effect in Cases of Permeable Strictures, New York State J. Med. 36:1089 (Aug. 1) 1936.

4. Rubin, I. C.: Tubal Strictures and Their Localization by Means of Uterotubal Insufflation and the Kymograph with Notes on the Comparative Value of Lipiodol, Am. J. Obst. & Gynec. 20:28 (July) 1930.

TETRALOGY OF FALLOT

REPORT OF A CASE IN A MAN WHO LIVED TO HIS FORTY-FIRST YEAR

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A major congenital anomaly of the heart associated with the development of the bulbus cordis[1] is the unusual and rare condition first noted by Peacock[2] and later fully described by Fallot.[3] The tetralogy of Fallot consists of the combination of an interventricular septal defect, pulmonary stenosis and insufficiency, dextroposition of the aorta and hypertrophy of the right ventricle. Abbott[4] ascribed this combination of lesions, largely on the basis of studies by Keith, to an arrest of development before the eighth week of embryonic life. She[5] cited seventy-three cases of the tetralogy in her comprehensive summary of the literature in 1928. The oldest patient in her series was 36 years of age and the average age in the series was 11 years.

The outstanding case of this type in the literature is the report by White and Sprague[6] of a noted musician who lived to his sixtieth year, surpassing in age all patients previously reported by more than twenty-three years. Leadingham[7] reported the case of a white girl aged 15 years who had been short of breath and cyanotic all her life; the cause of death was a subacute bacterial endocarditis of the pulmonary valve which had caused occlusion of the narrow pulmonary orifice. Blackford[8] related a clinical case in a Negro youth aged 20 who had always been short of breath, had clubbed fingers, and had the usual polycythemia. White and Boyes[9] cited the case in a white woman aged 21 with the tetralogy but whose death was due to a subacute bacterial endocarditis of the tricuspid valve and the pulmonary artery. Segall's[10] case of a white man aged 23 had been discussed by Abbott[5] in her review. Two other cases were reported in infants;[11] in one there was also a redundant left ductus arteriosus and in the other an anomalous band in the right auricle.

A much rarer congenital anomaly of the heart similar to this tetralogy is the Eisenmenger[12] type, described

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1. Dry, T. J.: An Approach to the Diagnosis of Congenital Heart Disease, Am. Heart J. 14:135 (Aug.) 1937.

2. Peacock, T. B.: On Malformations of the Human Heart, London, John Churchill & Sons, 1858.

3. Fallot, A.: Contribution à l'anatomie pathologique de la maladie bleue (cyanose cardiaque), Marseille méd. 25:77, 138, 207, 270, 341 and 403, 1888.

4. Abbott, Maude E.: Congenital Heart Disease, in Osler and McRae: Modern Medicine, ed. 3, Philadelphia, Lea & Febiger 4:613, 1927.

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6. White, P. D., and Sprague, H. B.: The Tetralogy of Fallot: Report of a Case in a Noted Musician Who Lived to His Sixtieth Year, J. A. M. A. 80:782 (March 9) 1929.

7. Leadingham, R. S.: Tetralogy of Fallot: Report of a Case With Bacterial Endocarditis of the Pulmonary Valve and Collapse of Both Lungs, Ann. Int. Med. 4:620 (Dec.) 1930.

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9. White, P. D., and Boyes, J. H.: Subacute Bacterial (Streptococcus Viridans) Endocarditis and Endarteritis Involving the Tricuspid Valve and the Pulmonary Artery in a Unique Case of the Tetralogy of Fallot Complicated by Congenital Pulmonary Regurgitation, Am. Heart J. 7:802 (Aug.) 1932.

10. Segall, H. N.: A Case of Tetralogy of Fallot; Clinicopathological Observations; Quantitative Studies of Circulation Rate and the Right-to-Left Shunt, Am. Heart J. 8:628 (June) 1933.

11. Hemnath, F. A.; Greenberg, Morris, and Shain, J. H.: Congenital Cardiac Anomalies in Infants; Report of Five Cases, Am. J. Dis. Child. 51:1356 (June) 1936.

12. Eisenmenger, V.: Die angeborenen Defecte der Kammerscheidewand des Herzens, Ztschr. f. klin. Med. 32:1 (supp.) 1897.

by him in 1897, which presents no pulmonary stenosis but a thick, wide pulmonary conus, so that a pulmonary insufficiency without obstruction is present. Baumgartner and Abbott [13] reported a case of this type in a white man aged 20 presenting impaired conduction and paralysis of the recurrent laryngeal nerve from pressure of the hypertrophied pulmonary conus; the patient died of a cerebral abscess. Rosedale [14] reported a third case of the Eisenmenger type in a white boy aged 10 years. Talley and Fowler [15] reported the fourth case of this kind in a white woman aged 31 who had had a normal physical and mental development, had passed through two pregnancies and had been able to take care of her house until a month before her death.

The case of the tetralogy of Fallot that we report is the first in which a clinical diagnosis was established (I. F. V.) and confirmed at postmortem examination

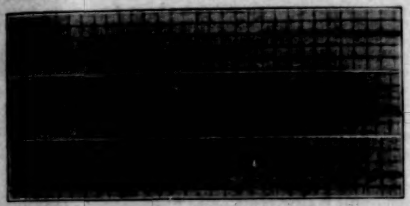

Fig. 1.—Electrocardiographic tracing in tetralogy of Fallot. Note prolonged PR conduction, right axis deviation, gross distortion of ventricular complexes and prolonged ST interval.

in the Cook County Hospital. The rarity of congenital heart disease at such a large institution may well be emphasized, as only ninety-nine cases (1 per cent) have been noted in 9,500 autopsy protocols in the period from 1929 to 1938. This incidence of congenital heart disease may be compared with and is as common at the Massachusetts General Hospital,[16] where sixty-seven cases (0.9 per cent) were noted in 7,500 postmortem examinations, and at the Johns Hopkins Hospital,[17] where 170 cases (1.29 per cent) were noted in 13,115 autopsies. Our case is also of unusual interest because the patient lived to the age of 41 years, five years longer than in any case reported previously with the exception of that of the noted musician,[4] and the cause of death was not in any way connected with the multiple cardiac abnormalities.

REPORT OF CASE

A man aged 41, a laborer, fairly well developed, was admitted to the medical service of the Cook County Hospital June 4, 1936, complaining of shortness of breath of thirty-five years' duration and swelling of the legs on and off during the past five years. He had had "heart trouble" as long as he could remember. Except for the shortness of breath he had been fairly well until 1931, when his legs became swollen. The swelling persisted a few weeks and then disappeared, only to return again. He had been attending the cardiac clinic of a medical dispensary very irregularly for the previous five years. The day before admission to the hospital he had a "fainting spell" and fell, injuring the right circumorbital region.

Marked cyanosis and clubbed fingers were evident. A diffuse apex impulse was visible in the sixth left intercostal space at the midaxillary line. There was a palpable systolic thrill over the entire precordial area. The right border of the heart was 6 cm. to the right of the midsternal line, and the left border was in the midaxillary line. The systolic blood pressure was 168, the diastolic 100, the pulse rate 56. There was a long, very loud systolic murmur audible over the entire precordial area and over the cardiac area well to the right of the sternum. This long murmur was propagated upward into the vessels of the neck. There was a long diastolic murmur with the punctum maximum at the third left intercostal space at the margin of the sternum. The systolic murmur over the aortic and pulmonic areas was much louder than the diastolic murmur. The liver edge was palpable below the right costal margin. There was brown pigmentation, thickening with lichenification, and scaling of the skin on the lower half of the legs.

Fig. 2.—Heart shadow occupies most of the lower part of the chest. The wide vessel shadow at the base is due to the widely dilated first portion of the aorta.

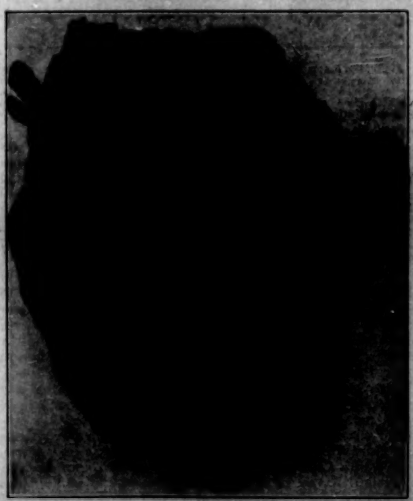

Fig. 3.—Anterior view of the heart with the left ventricle open. Arrowhead points to basal interventricular septum defect.

The urine had a specific gravity of 1.010, considerable albumin and many pus cells.

The blood count revealed a hemoglobin content of 100 per cent, 7,800,000 red blood cells and 11,400 white blood cells, with a normal differential ratio. The Kahn reaction of the blood was negative.

13. Baumgartner, E. A., and Abbott, Maude E.: Intraventricular Septal Defect with Dextroposition of the Aorta and Dilatation of the Pulmonary Artery ("Eisenmenger Complex") Terminating by Cerebral Abscess, Am. J. M. Sc. 177:639 (May) 1929.

14. Rosedale, R. S.: Interventricular Septal Defect, Dextroposition of the Aorta, and Dilatation of Pulmonary Artery, Am. J. Path. 11:333 (March) 1935.

15. Talley, J. E., and Fowler, K.: Tetralogy of Fallot (Eisenmenger Type) with Hypoplasia of Dextroposed Aorta, Am. J. M. Sc. 191:618 (May) 1936.

16. McGinn, Sylvester, and White, P. D.: Progress in the Recognition of Congenital Heart Disease, New England J. Med. 214:763 (April 16) 1936.

17. Leech, C. B.: Congenital Heart Disease: Clinical Analysis of Seventy-Five Cases from the Johns Hopkins Hospital, J. Pediat. 7:802 (Dec.) 1935.

An electrocardiogram taken June 8 revealed an unusual picture (fig. 1). The rate was 60 and regular. Right axis deviation was noted. The P waves were prominent in all leads but diphasic in lead 3. The PR interval was prolonged to 0.28 second. The QRS complex was 0.08 second and grossly notched. The ST interval, while isoelectric, was prolonged, measuring 0.28 second. The T waves were inverted

Fig. 4.—Anterior view with open right ventricle. Aorta and pulmonary artery arise from the right ventricle. The interseptum defect is indicated by the tails of the arrow, with the arrowhead in the right-sided aorta. Vertical glass rod extends from the right ventricle into the stenosed pulmonary artery.

in leads 2 and 3. This abnormal type of electrocardiogram was interpreted as being related, probably, to the anatomic variations in the bundle of His and its branches, induced by the basal interventricular septal defect. Impulse transmission must have necessarily taken an abnormal course over the conduction system because of the distortion of the conducting mechanism. The prolonged PR interval, however, may have been the result of the uremic syndrome.

Fluoroscopy of the chest revealed considerable enlargement of the right border of the heart with marked enlargement also to the left and upward. The pulmonary conus was not visualized. Barium sulfate by mouth showed a diminished retrocardiac space but no compression of the esophagus. A 2 meter chest plate revealed enormous cardiac enlargement (fig. 2).

Chemical analysis of the blood taken on the same day revealed a urea nitrogen content of 130 and a creatinine content of 11 mg. per hundred cubic centimeters. The patient's condition changed at 2 p. m. June 9, when generalized clonic convulsions occurred. He became drowsy, sank into a deep stupor with Cheyne-Stokes respiration and died June 11, with a terminal picture of uremia. Chemical analysis of the blood on the last day of life showed a urea nitrogen content of 133 and a creatinine content of 10.75 mg. per hundred cubic centimeters.

At postmortem examination (Dr. R. H. Jaffé) the pericardial sac extended from the right costochondral junction to the left midaxillary line and compressed the left lower lobe of the lung. The heart weighed 750 Gm. The left ventricle measured 20 mm. and the right ventricle 18 mm. The myocardium was firm and a light purplish brown. The apex was formed by the right ventricle. The epicardium was smooth and shiny. The left auricle was slightly dilated and the thickness of the wall measured 1 mm. The foramen ovale measured 6 mm. in the longitudinal and 3 mm. in the greatest transverse diameter. It was covered by a fold which overlapped the opening completely. The mitral valve was of normal configuration.

In the uppermost portion of the interventricular septum there was a crescent-shaped defect 30 mm. in transverse and 12 mm. in vertical diameter. This defect, which was located opposite the anterior cusp of the mitral valve, led into the pulmonary conus and formed the only outlet of the left ventricle.

The aorta originated from the right ventricle and measured 120 mm. in circumference. The aortic valve had four leaflets; about the middle leaflet the left coronary artery originated, while about the right leaflet the right artery originated.

The pulmonary artery was located to the left and posteriorly to the left leaflet of the aortic valve. The pulmonary artery extended into the right ventricle for a distance of 3 cm. as a constricted tube lying on the right ventricular surface of the interventricular septum close to the anterior origin of the latter. The pulmonary ostium was thus about 3 cm. below the level of the aortic valve leaflet attachments and the opening was constricted to a circumference of 3 cm., as was the intraventricular portion, but then it widened to 53 mm. in circumference. The pulmonary artery was thin walled, with a smooth intimal lining. The pulmonary valve had two leaflets which were fused together to form a circular fold, which was evidently incompetent. The right auricle was markedly dilated, about 8.5 cm. in transverse diameter. The tricuspid valve was of normal configuration.

The lungs were moderately distended and subcrepitant. The main pulmonary artery was of normal configuration. On section it was a purple-gray and moderately moist. There were scattered fatty plaques in the pulmonary artery. On microscopic section no difference was noted in caliber between the branches of the pulmonary artery and the bronchial arteries.

Fig. 3.—Anterior view showing right ventricle and right aorta. Note the thickness of the right ventricular wall. The greatly dilated first portion of the aorta with the great vessel branches derived from this portion.

The kidneys weighed 225 Gm. and were moderately firm, and the capsule stripped with ease. The surface was a light purple-gray and uniformly granular. The granules were of pinhead size. The cortex measured 7 mm. and was purplish gray, but the markings were distinct. Microscopic examination of the

kidney sections revealed that the majority of glomeruli were completely or partially hyalinized. The remaining glomeruli were large and very cellular with the capsular space often obliterated. Many of the tubuli contorti were atrophic with a corresponding increase in the interstitial tissue. The granules were composed of hypertrophic tubules, the lumen of which was wide and the lining of which was cuboidal and finely granular. The larger arteries showed hypertrophy of the media, while the wall of the afferent and intralobular arterioles was slightly thickened. Sudan III stain revealed much fatty material, chiefly in the stroma in the form of nests of large cells filled with fat droplets. There was also some fat in the epithelium of some of the convoluted tubules and in the hyalinized glomeruli.

The complete anatomic diagnosis was chronic glomerulonephritis, detorsion defect of the large arteries of the heart with the origin of the aorta and pulmonary artery from the right ventricle, stenosis of the pulmonary ostium, defect of the interventricular septum, patent foramen ovale, hypertrophy of

Fig. 6.—Posterior view of the heart with the right auricle and ventricle open. Glass rod through the slitlike interauricular septum defect.

both ventricles of the heart, especially the right, marked dilatation of the right auricle of the heart, slight atheroma of the aorta and the coronary arteries, passive congestion and edema of the lungs and compression atelectasis of the left lower lobe of the lung, marked hydropericardium and slight ascites and bilateral hydrothorax, slight edema of the brain, nodose goiter and prostatolithiasis.

COMMENT

The slight degree of disability which this patient demonstrated during life can probably be explained by several points: First, the interventricular septal defect was so located that the direction of the blood current from the left ventricular contraction was apparently directed into the aortic opening. Second, the mouth of the pulmonary artery was in the right ventricle, as this artery was intraventricular for about 3 cm. As this pulmonary ostium was just below and anterior to the interventricular septal defect, right ventricular contraction forced blood into the stenosed pulmonary artery opening rather than through the septal defect. The patent foramen ovale was slitlike and covered by a fold, so that in all probability it was functionally closed. The development of the conus arteriosus was clearly demonstrated by the side to side position of the aorta and pulmonary artery, with complete coats, however, separating these vessels. The first portion of the aorta was evenly dilated and the major blood vessels came directly from this enlarged sac. The arch was poorly developed and the aorta, after leaving this saclike first portion, was comparatively small and narrow, measuring 40 mm. in diameter in the second portion and 36 mm. in diameter in the third portion.

SUMMARY

In an unusual case of the tetralogy of Fallot in a laborer who lived to his forty-first year, the second longest history in the literature, the clinical diagnosis was established according to Fallot's original descriptions. It is the only case of its kind which has come to autopsy in the records of the Cook County Hospital, where congenital heart disease of all types represents only 1 per cent of the postmortem material. The senior author, who has had a long association with this institution, has seen only one other adult [18] with congenital heart disease who lived longer than the patient in the present instance. The cause of death in our case was not due to any cardiac disturbance or dysfunction but to the uremic syndrome on the basis of chronic glomerulonephritis.

30 North Michigan Avenue—3507 Lawrence Avenue.

Clinical Notes, Suggestions and New Instruments

BENIGN GRANULOMA OF THE NOSE (SO-CALLED SARCOID)

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Sarcoid cannot be considered a rare disease. It is, however, of considerable interest in that marked variations in clinical manifestations may occur, and it offers considerable difficulty in diagnosis in differentiating tuberculosis, syphilis and other types of proliferative granulomas.

There are several outstanding facts in the manifestations of sarcoid. The sites of particular involvement are the skin and the lymph nodes, more particularly the superficial lymph nodes; but the mediastinal lymph nodes may show massive involvement. The bones involved are most frequently those of the extremities, especially the smaller bones, where frequently destructive lesions are present. The long bones also may be involved. In a review of the literature almost every part of the body has been mentioned as being involved in this process, and while we have found reference made to involvement of the nasal bones [1] we have not encountered a report of involvement of the nasal mucosa.

The lesion histologically [2] is a granuloma composed of collections of epithelioid cells which occasionally surround giant cells of the foreign body type. There is rarely any necrosis. Tubercle bacilli are not found. The cutaneous test is almost uniformly negative.

Clinically the course is of a benign prolonged character and some lesions may progress while others are retrogressing.

18. Volini, I. F.: Double Mitral Orifice, Tr. Chicago Path. Soc. 10: 22 (Dec. 1) 1915.

1. Longcope, W. T., and Pierson, J. W.: Boeck's Sarcoid (Sarcoidosis), Bull. Johns Hopkins Hosp. 60: 223-296 (April) 1937.

2. Nickerson, D. A.: Boeck's Sarcoid: Report of Six Cases in Which Autopsies Were Made, Arch. Path. 24: 19-39 (July) 1937.

There may be any combination of involvement, and the various syndromes described are purely clinical differentiations.[3]

From the standpoint of etiology, no single organism has been found to be present. A preponderance of evidence favors tuberculosis. Etiologic factors have been given also as leishmaniasis and leprosy; these seem unlikely. The finding of the

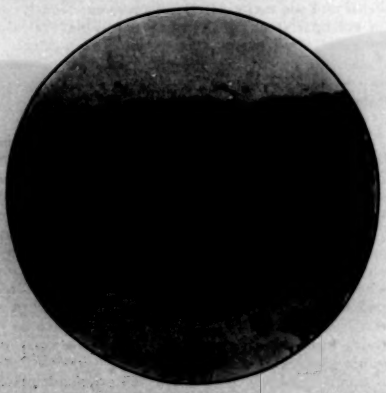

Fig. 1.—Section showing the thickness of the entire mucous membrane. Tubercle-like lesions are scattered throughout among the glands. Giant cells are found at the center of some of the tubercles. The latter are clusters of epithelioid cells radiating out from the center.

picture of hyperplastic tuberculosis with multiple tubercles without the presence of polymorphonuclear neutrophils and necrosis, without the finding of tubercle bacilli in cultures and

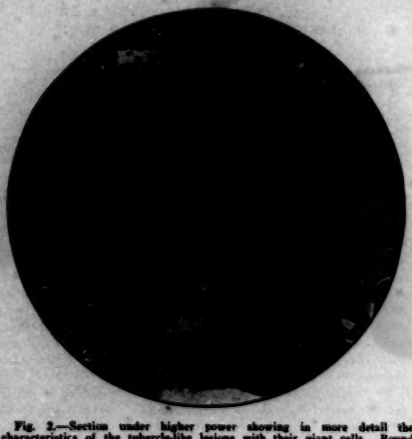

Fig. 2.—Section under higher power showing in more detail the characteristics of the tubercle-like lesions with their giant cells. Round cells and plasma cells are present, but there are no polymorphonuclear neutrophils, and no caseation necrosis is present.

in guinea pig inoculation and the negative cutaneous reaction for tuberculosis makes a diagnosis of sarcoid. It had probably better be termed granuloma of unknown etiology.

3. Grschebin, S.: Concerning the Identity of Sarcoid Boeck, Sarcoida Darier-Roussy, Erythema Induratum Bazin and Lupus Pernio, Urol. & Cutan. Rev. 39:477-481 (July) 1935.

REPORT OF CASE

A widow aged 50 presented herself for the first time in December 1930 complaining of nasal obstruction of several years' duration. In January 1931 we did a submucous resection of the septum and removed the cystic middle turbinate. At the time of the original examination she said that she felt there was a lump coming on the left side of her nose but was not sure, since the nose had always been a little broad and asymmetrical. Nasal breathing was satisfactory after the submucous resection. She returned in May 1932, sixteen months after the operation on the septum. At this time she showed definite infection of both antrums. She again remarked that she felt that her nose was enlarging but could not be sure that there was any material change. The x-ray laboratory reported an increased density in both antrums, also that the nasal bones showed an unusual density, especially along the inferior margins. The Wassermann reaction was negative on this occasion and had been negative on the previous examination. The infection of the antrums did not improve under conservative treatment, and a bilateral Caldwell-Luc operation was done from which recovery was rapid and uneventful. The

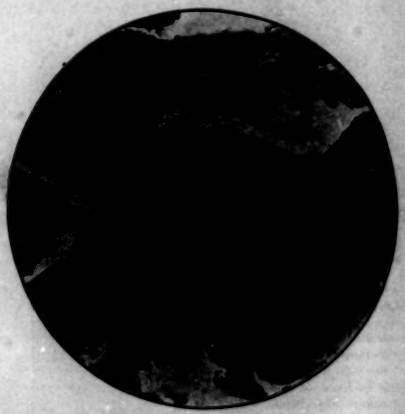

Fig. 3.—Section showing the tubercle-like lesion among the osseous trabeculae of the nasal bone. The spaces between the trabeculae are widened by this fibroblastic and granulomatous tissue. There is a slight increase in the number of osteoblasts along the trabeculae of the bone.

drainage ceased and the function of the nose was satisfactory, but the aching across the upper part of the face continued. During the next two months we were sure that the nose was enlarging across the bridge, and material for biopsy was taken from the bone at the junction of the nasal bones and the ascending process of the superior maxilla, from the subcutaneous tissue and from the mucosa of the nose.

A summary of the pathologic report by Dr. Robertson was as follows: On cross examination the bony tissue appeared rather spongy and the mucosa was somewhat firmer than normal. It was pale. On microscopic examination sections of both the mucosa and the bone showed the presence of many discrete tubercle-like lesions scattered throughout. These consisted of clusters of epithelioid cells radiating out from the center, and in the center of some there was a giant cell. These giant cells occurred singly and showed a peripheral arrangement of the nuclei in the shape of a horseshoe. Some of the tubercles on close examination were seen to contain capillary blood vessels in which there were erythrocytes. No polymorphonuclear neutrophils were present. There were lymphocytes in the surrounding tissue. It seems that the tubercle-like lesions in places were juxtaposed to blood vessels, and the blood vessels seemed somewhat narrowed. There was a suggestion

of central necrosis in some of these tubercles, but this was not definite and at no place was there anything that had the appearance of true caseation necrosis. In the bony tissue these tubercles occurred in the fibrous tissue among the bone trabeculae; there was evidence of active proliferation of the bone manifested by an increased number of osteoblasts along the

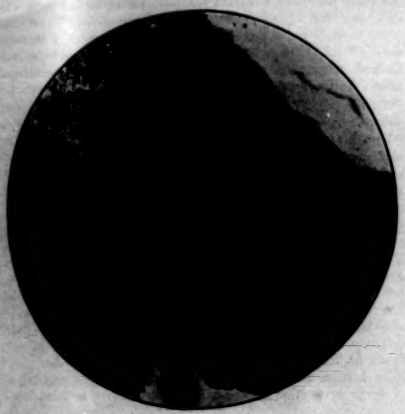

Fig. 4.—At the center is seen a thick-walled blood vessel with marked perivascular round cell infiltration and in the nearby vicinity there are several of the tubercle-like lesions. This was thought possibly to indicate syphilis.

trabeculae. Bacterial stains failed to reveal any bacteria of any type. Spirochete stains were not made.

On the basis of a distinct granulomatous process, which was principally proliferative and appeared to be somewhat perivascular without caseation necrosis, it was thought that this might possibly be syphilis in spite of the fact that the Wassermann reaction was consistently negative. It was on this basis that a therapeutic trial of antisyphilitic treatment was given.

Sections of the mucous membrane of the antrum did not show any evidence of the granulomatous process. The pathologic diagnosis was chronic sinusitis.

On the basis of the pathologic report the patient was put on antisyphilitic treatment consisting of intermittent courses of neoarsphenamine and thiobismol from September 1932 until March 1935. The only positive improvement during this time was relief from the aching pain in the face. The enlargement of the nose was insidiously progressive.

During the spring of 1936 there appeared a discoloration of the skin of the nose, and the opinion of a dermatologist was sought. Following is the report of Dr. Lyle B. Kingery: "Dermatologic examination reveals a purplish, plaque-like infiltrative process involving the skin of practically the entire nose. The process presents a firm consistency, is painless and devoid of acute inflammatory symptoms. It is fairly well demarcated and macroscopically presents no epidermal changes. In addition, both inspection and palpation impressed me with the fact that there is a productive change involving the underlying structures, particularly at the juncture of the nasal bones with the superior maxilla. Pressure reveals this to be painless, hard and fairly regular.

"The presence of the purplish infiltration, the absence of general health impairment, the slow progress over an extended period of time and the location of the process all point to a diagnosis of sarcoid. While this is not common, there is apparently sufficient evidence of occasional bony involvement to make this a part of the picture. Finally, in talking with Dr. Robertson, I was pleased to have him state that this diagnosis was acceptable to him in a reconsideration of the results of his biopsy."

At Dr. Kingery's suggestion the patient was treated with x-rays and given solution of potassium arsenite and weekly injections of bismuth salicylate. These were continued with intermissions until June 1937, when all treatment was stopped. There had been a decided improvement and we hoped the growth had been arrested. When she returned for examination in September it was discouragingly evident that the process had become active again and the treatment was resumed. To date there has been no improvement, but for the last three months the process has remained stationary.

SUMMARY

We have just reported a case of sarcoid or, better termed, benign granuloma of unknown etiology, involving the nasal mucosa, nasal bones and overlying skin. The considerable difficulty in arriving at a final diagnosis was encountered because of the unusual involvement of the nasal bones and nasal mucosa. With the involvement of the overlying skin Dr. Kingery uncovered the true nature of the disease process and a review of the sections confirms his interpretation.

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GANGLIONEUROMA OF THE OVARY

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Tumors composed of such highly specialised tissue as adult ganglion cells and their processes are comparatively rare. McFarland,[1] who reported a case in 1931, was able to find

Fig. 1.—Ganglioneuroma of the ovary. Posterior view of the lobulated, soft, epithelial covered tumor. The parenchyma is yellow-pink, juicy, translucent, very vascular, extremely soft and easily picked away. The tube is shown above.

reference in the literature to ninety-three similar tumors. The literature was likewise reviewed in 1932 by Bigler and Hoyne,[2] who added two cases of their own.

From the Department of Pathology, University of Tennessee Pathological Institute.

We are indebted for the illustrations in this study to Dr. Joseph L. Scianni, Artist, University of Tennessee Pathological Institute.

1. McFarland, Joseph: Ganglioneuroma of Retroperitoneal Origin, Arch. Path. 11:116 (Jan.) 1931.

2. Bigler, J. A., and Hoyne, Archibald: Ganglioneuroma: Report of Two Cases with Review of Literature, Am. J. Dis. Child. 43:1352 (June) 1932.

Loretz [3] reported the first instance in 1870. Since then ganglioneuromas have been reported as arising in the central nervous system, cranial nerve roots and their associated ganglions and the sympathetic ganglions of the neck, thorax and abdomen. They also may arise in the adrenal medulla, the carotid gland, the coccygeal gland and Zuckerkandl's organ. No previous report has been found of a ganglioneuroma arising in the ovary.

Ganglioneuromas appear to arise chiefly from the sympathetic nervous system. In the ovary, groups of sympathetic ganglion

Fig. 2.—Section of ganglioneuroma of the ovary, × 300. The stroma is very loose and rich in serum, with numerous delicate capillaries. The cells vary in size and shape, consisting of ganglion cells, polymorphonuclears and plasma cells. On the right, above and below are nerve fibers composed of pale, fine, wavy fibrils with elongated fusiform nuclei.

cells occur normally in the medulla near the hilus. Ewing [4] suggests that in cases presenting ganglioneuroma there is some "embryonal disturbance of the structure of the sympathetic nervous system, with the presence of superfluous undifferentiated tissue in localities giving origin to the tumors." This view is favored by their appearance so frequently in early life or as congenital tumors and by the fact that they are frequently multiple. That some of these tumors may begin as undifferentiated or embryonal types and later differentiate into a more adult type of ganglioneuroma is evident from the case reported by Cushing and Wolbach.[5]

A ganglioneuroma is usually a firm, circumscribed, nodular pale tumor which may be small or large. The microscopic appearance is distinguished by the presence of characteristic adult ganglion cells with their processes. The proportion of neurofibrils present is variable.

REPORT OF CASE

History.—R. B., a Negro girl aged 4 years, was admitted to the surgical service of Dr. F. W. Smythe at the John Gaston Hospital, April 11, 1935, because of painful swelling of the abdomen which had been noted for three weeks. This had become progressively worse and for two days before admission was accompanied by an edematous swelling of the legs.

Physical examination showed that the child was normally developed and well nourished. The abdomen was distended and occupied by a freely moving mass extending out of the pelvis to a level just above the umbilicus. The mass was fairly firm and smooth but with palpable depressions on one edge. It was not tender. Roentgenographic studies indicated that the mass was not associated with the kidney or intestine. The other physical changes were noncontributory.

Roentgen irradiation with 1,500 roentgens within nine days was given. Laparotomy was then performed and the mass excised, along with the attached right ovary and the fallopian tube. An uneventful convalescence followed.

Pathologic Report.—The specimen consisted of a lobulated, soft mass weighing 200 Gm., covered with tunica albuginea. Along its summit ran the fallopian tube. On section the tissue was everywhere yellow-pink, juicy, translucent, very vascular, extremely soft and easily picked away (fig. 1).

Microscopic examination showed a thin peripheral layer of ovarian tissue. Underlying this the normal ovarian structure was completely replaced by a tissue whose stroma was very loose and for the most part appeared to be composed of serum. There were many delicate capillaries. The cells varied in size and shape, but the general type was a large multipolar cell with a basophilic, finely granular cytoplasm. The nucleus was large, round or oval, light staining and reticulated and had in it a large, prominent, densely staining nucleolus. The typical cell was tripolar, with processes from its poles, some of which could be followed for short distances into the stroma. These cells bore a striking resemblance to a typical ganglion cell. A large proportion of these larger cells were multinucleated;

Fig. 3.—Section of ganglioneuroma of the ovary, × 725, center of figure 2. Scattered loosely through the fluid-filled, practically fibrous tissue-free stroma are large multipolar ganglion cells with basophil, finely granular cytoplasm and large, round or oval, light staining and reticulated nuclei with large, prominent, densely staining nucleoli. A typical tripolar ganglion cell with processes from its poles can be seen in the center, and a delicate capillary on the left below. Several ganglion cells contain two or three nucleolated nuclei. Plasma cells and polymorphonuclear leukocytes are also seen.

the majority contained two well formed nucleolated nuclei as described at opposite poles of the cell or beside one another. Some of the cells contained three nuclei. The variations in the cells consisted in the amount and shape of the cytoplasm,

3. Loretz: Ein Fall von ganglionen Neurom, Virchows Arch. f. path. Anat. 49:435, 1870.
4. Ewing, James: Neoplastic Diseases, ed. 3, Philadelphia, W. B. Saunders Company, 1928, p. 471.
5. Cushing, H. S., and Wolbach, S. B.: Am. J. Path. 3:203 (May) 1927.

but the nuclei were essentially the same. The cell shapes ranged from round ones the size of a large mononuclear with one process to fat fusiform ones with a process at each end. Some of the cells showed a single large vacuole in the cytoplasm. A number of the larger cells showed a single, large, pink staining hyaline droplet in their cytoplasm, or the whole cell body was filled with hyaline droplets ranging in size from that of a large red blood cell to fine droplets. An occasional mitotic figure was found in a ganglion cell. The cells were either scattered loosely and indiscriminately through the fluid-like stroma or were massed in large poorly demarcated clumps. In the center of these larger denser fields some pale, fine, wavy fibrous bundles with wavy, elongated, deep staining fusiform nuclei were present. These bundles were frayed at their ends and suggested nerve fibers. The section was practically free of fibrous tissue. A striking feature of the whole section was the presence of large numbers of plasma cells and mature polymorphonuclear cells, about equal in number, which were indiscriminately infiltrated throughout the section with no suggestion of clumping or localization (figs. 2 and 3).

SUMMARY

A ganglioneuroma of the ovary occurring in a Negro girl aged 4 years consisted of adult ganglion cells and fibrils mixed with some less differentiated elements. No previous report of a ganglioneuroma of the ovary has been found in the literature.

TRAUMATIC THROMBOSIS OF DEEP PALMAR VEIN

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AND
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There has been a good deal of literature devoted to injuries to the hand and their economic significance in industry. Discussions of infections, injuries to tendons and nerves and fractures form the bulk of the articles, but reports of injuries to blood vessels appear from time to time. There have been several cases of aneurysm[1] reported and one case of thrombosis of the ulnar artery[2] following a blow.

Fig. 1.—Position of palmar mass on left hand.

No case of traumatic thrombosis of the deep veins of the palm of the hand could be found in the literature, so we felt it worth while to report such a case. The thrombosis was the result of a sudden severe jar at the base of the hand. A definite, firm, tender, oblong mass could be palpated at the base of the hypothenar eminence (fig. 1). It was thought to be a ganglion or chronic tenosynovitis, but exploration revealed a thrombosed deep ulnar vein and fourth digital vein (fig. 2).[3]

Operative removal resulted in relief of pain in the palm and made it possible for the patient to return to work as a blacksmith within three weeks.

The patient was a man of stable temperament whose story could be relied on.

1. Regnault, J., and Bourrut-Lacouture, H. E. L.: Anévrisme professionel de l'arcade palmaire superficielle, ev. de chir. **47**:337, 1913. Rastouil and von Robineau: Bull. et mém. Soc. de chir. de Paris **39**:15 (No. 1) 1913.
2. von Rosen, Sophus: A Case of Thrombosis of the Ulnar Artery After an Injury with a Blunt Instrument, Acta chir. Scandinav. **73**:300-306, 1934.
3. Toldt, Carl: An Atlas of Human Anatomy: Anatomy of Veins of the Palm, ed. 2, New York, Rebman Company **3**:700, 1926.

REPORT OF CASE

A man aged 67, a blacksmith, about a month before consulting a physician was holding an anvil while it was being pounded on, and a sudden jar caused immediate pain in the palm of the left hand. Since that time he had experienced considerable pain whenever he used that hand. A mass appeared at the site of the injury soon afterward. The ring finger became so painful that he could not move it without discomfort. Pressure

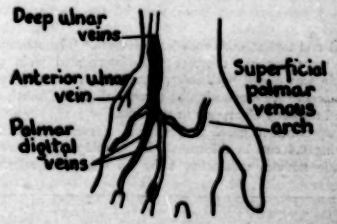

Fig. 2.—Veins of palm of left hand, showing portion thrombosed.

of any kind on the palm caused pain. He padded and bandaged it but still had difficulty in using his hand. He did not stop work, however, thinking that the condition would improve of its own accord in time. After four weeks, during which time the pain made him entirely unable to carry on his work satisfactorily, he consulted a physician.

His past history and family history were entirely irrelevant. He was well nourished and well developed, appearing robust for his age. There were no conditions noted of any significance except for scars on his arms of many previous injuries incident to his work. None had been of a serious nature. On examination of the left hand, the palm at the base of the hypothenar space was tender. A mass was palpable below the surface, apparently in the muscle bundle, measuring about 1 by 2.5 cm. It was firm and movable but did not move with flexion and extension of the fingers. No surface lesion could be seen. There was slight diminution in sensation in the fourth and fifth fingers on the palmar aspect.

Dr. Steele F. Stewart, called into consultation, described the lesion as follows: "There is a small deep elastic mass near the base of the hypothenar eminence of the left hand which appeared following trauma one month ago. It is slightly tender

Fig. 3.—Thrombosed vein of hand removed at operation.

and appears to be along the tendons of the fifth finger. My impression is that it is a tenosynovitis, post-traumatic, which interferes with use of the finger and hand. I think that long rest will let it disappear but that surgery will hasten the process." The surgeon's diagnosis was "ganglion" of the left palm.

It was decided that surgery should be resorted to to put the man back to work as soon as possible.

Operation was done under local procaine hydrochloride anesthesia by injection into the median and ulnar nerves just above

the wrist and a cuff anesthesia by infiltration around the wrist. Incision was made in the palm of the left hand beginning just distal to the wrist and following the middle crease of the palm for a distance of about 3.5 cm. The palmar skin was then dissected back, the palmar fascia exposed and a mass palpated directly beneath the palmar fascia. The fourth digital nerve branching from the ulnar nerve was then exposed just beneath the fascia and dissected free from the mass. The mass was found to originate from the fourth digital vein and extended upward within the deep ulnar vein 3.5 cm. to the wrist. It consisted of a dilated vein with thrombosis. The vein was clamped and tied at both ends and removed. The subcutaneous tissues were brought together with interrupted plain catgut. The skin was closed with interrupted dermal mattress sutures. The postoperative diagnosis was thrombosis of the fourth digital vein and the deep ulnar vein in the hand.

The specimen (figs. 3 and 4) was a greatly dilated vein measuring 0.4 cm. in thickness. In its midportion there were two little nodules measuring 1 by 0.6 cm. The microscopic

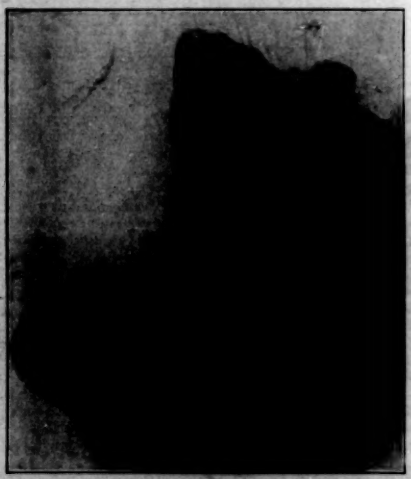

Fig. 4.—Cross section of thrombosed vein of hand showing beginning organization of clot.

section showed a thickened fibrous venous wall with antemortem clot which was quite firmly adherent in places. The pathologic diagnosis was dilatation and thrombosis of a small vein.

The patient made an excellent recovery and was able to return to active duty three weeks after the operation. He is now free from pain and is using his hand normally.

SUMMARY

An injury resulted in thrombosis of the deep ulnar and fourth digital veins of the palm of the left hand. A small, deep, palpable, tender mass was present at the base of the hypothenar eminence. The question of prolonged rest for the cure of a chronic tenosynovitis was considered but rejected in favor of exploration. At operation a greatly dilated small thrombosed vein was removed and the patient was able to return to work soon after.

This is the first case we can find reported in the literature of traumatic thrombosis of a deep palmar vein and we hope that this presentation will be of some help in the diagnosis of similar cases in the future.

6777 Hollywood Boulevard.

THE PHOTOSTETHOSCOPE

A DEVICE FOR VISIBLY DEMONSTRATING CARDIAC SOUNDS, ESPECIALLY FETAL HEART SOUNDS

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Knowledge of the condition of the fetus in utero is entirely dependent on observation of the fetal heart tones. Methods of observation have varied as science has progressed and made available new instruments. Fetal heart tones were first heard with the unaided ear in 1818 by Major.[1] It was not long before the newly invented stethoscope was also put into use. That the stethoscope itself was not a great advance is proved by the frequency with which one encounters direct auscultation, even at the present time. Later the head stethoscope was introduced, making it possible for the obstetrician to observe the heart tones without interfering with asepsis. However, at best it is an awkward, uncomfortable instrument.

With the improvement of electrical means of reproducing, transmitting and amplifying sound waves, it was inevitable that such methods should be applied to the study of adult and fetal heart sounds. In 1923 Falls and Rockwood[2] published a preliminary report on the use of microphonic reproduction of fetal heart tones. They employed the instrument demonstrated by Abbott at Purdue University in 1922.[3] In this preliminary report they mention certain difficulties encountered, most serious of which arose from extraneous noises and feed-back howls. They believed that if these difficulties could be eliminated the machine would become standard equipment in every maternity hospital. The problems they faced in 1923 are still met today, in spite of the tremendous improvement in microphones, thermionic valves and amplifying and reproducing apparatus. Electric stethoscopes are available commercially for the auscultation of adult heart tones and for the demonstration of fetal heart tones, but they are not entirely satisfactory. The most recent type of amplifying stethoscope is that described by Matthews.[4] In order to overcome the aforementioned difficulties, his model has become such a complicated, cumbersome and expensive piece of equipment that the author himself admits it to be unpractical even for hospital use.

The present study is concerned with the development of a simple, compact and inexpensive device that will demonstrate to the physician the condition of the baby as manifested by the heart tones. A sensitive transmitter of the crystal type and a high gain amplifier which satisfactorily amplifies fetal heart tones so that they can be heard several hundred feet away are so sensitive that the microphone picks up the sounds from the loud speaker and develops a howl. It has been impossible to filter out the feed-back and preserve simplicity and compactness. In this device the loud speaker has been eliminated entirely and a small neon lamp substituted; the device is called the photostethoscope. The photostethoscope translates sound into flickers of light and by this means reproduces the rate and regularity of fetal heart sounds quite as faithfully as the speaker. The greatest nuisance—feed-back—is eliminated.

The photostethoscope is housed in a small metal cabinet from which extend leads to the microphone and power line. The microphone, supported by sponge rubber, is attached by a wide adhesive strip to that location of the abdomen where fetal heart tones are most audible. Electrical connection is established through any wall plug. The gain control (*A*) is then adjusted to attain the degree of amplification necessary to operate the indicating bulb (*B*). Either the first or the first and second fetal heart sounds may be demonstrated as flickers of light by varying the gain adjustment.

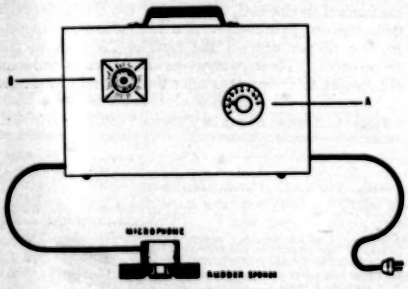
The microphone, on its rubber cushion, causes no discomfort to the patient. During labor it need not be in constant applica-

1. Major, quoted in Bibliotheque universelle de Genève, November 1818.
2. Falls, F. H., and Rockwood, A. C.: Use of Microphonic Stethoscope in Demonstration of Fetal Heart Tones, J. A. M. A. 81:1683-1684 (Nov. 17) 1923.
3. Abbott, R. B.: Eliminating Interfering Sounds in a Telephone-Transmitter Stethoscope, Physical. Rev. 21:200 (Feb.) 1923. Keiper, G. F.: A Multiple Electrical Stethoscope for Teaching Purposes, Correspondence, J. A. M. A. 81:679 (Aug. 25) 1923.
4. Matthews, H. B.: The Continuous Auscultation of the Fetal Heart by Means of an Amplifying Stethoscope, Am. J. Obst. & Gynec. 34:898-899 (Nov. 1937.

tion but can be held against the abdomen as frequently as desired. During delivery the microphone remains constantly in place and in no way interferes with the aseptic technic.

There are some minor defects. Strong uterine contractions interfere with the operation of the apparatus for the duration of the pain, but with relaxation the heart tones are again demonstrable. Fetal movements and shifting of the linen produce arrhythmic flickers of light; slight changes in the draping technic will minimize the disturbance from this source. Extraneous sounds, caused by walking or talking in the labor room, interfere only when they are loud, but crying or snoring by the patient creates a more serious annoyance. The vibration is apparently transmitted through the delivery table to the microphone. This annoyance can be greatly reduced by using a sponge rubber mattress on the delivery table and securing the cooperation of the patient. The most serious source of interference is from unshielded, high voltage x-ray equipment. Proper shielding and grounding of such x-ray apparatus constitute the only satisfactory method of eliminating such disturbance.

It is safer to install the amplifying unit outside the delivery room when gaseous anesthesias are used. For this the microphone cord can be lengthened and the indicating lamp may be mounted in the delivery room. There is nothing in the amplifier to spark or arc, but a breakdown of the condenser might be a hazard.



Details of photostethoscope.

These objectionable factors are not always present. In any event they are outweighed by the positive advantages. The facility of application of this instrument encourages its frequent use. The continuous portrayal of fetal heart tones presents constant information concerning the condition of the fetus. With such information available, failure to recognize imminent intrapartum death should occur less frequently.

The photostethoscope may prove useful in the study of abnormalities of the adult heart. Enough work has been done to indicate definite light patterns associated with murmurs and the various arrhythmias. It affords a new avenue of approach for studying the heart and provides an additional method of demonstrating cardiac action to students.

SUMMARY

The photostethoscope is a practical, efficient and inexpensive device for demonstrating fetal and adult cardiac sounds. It was designed for the continuous observation of fetal heart tones during second stage labor and delivery. Fetal distress can be promptly detected by its use.

1540 East Fifty-Third Street.

The First European Asylum.—The first European asylum devoted exclusively to the care of the insane of which we have indisputable record was that built at Valencia, Spain, in 1408 by Fray Gope Gilaberto. A number of other asylums were established in various other parts of Europe during the sixteenth century.—Deutsch, Albert: The Mentally Ill in America, New York, Doubleday, Doran & Co., Inc., 1937, p. 16.

Special Clinical Article

EVALUATION OF THE INJECTION TREATMENT OF HERNIA

A STATISTICAL AND ANALYTIC STUDY

CLINICAL LECTURE AT SAN FRANCISCO SESSION

FRANKLIN I. HARRIS, M.D.
AND
ALFRED S. WHITE, M.D.
SAN FRANCISCO

The treatment of hernia by injection has been a controversial subject for over a hundred years. Until recently there was an overwhelming skepticism as to the safety and value of this method. In the last five years this skepticism has been replaced by an enthusiasm which has resulted in its widespread use. Optimistic reports have appeared similar to those of the late Ignatz Mayer[1] of Detroit and Franz Wyss[2] of Switzerland, who claimed a cure in 96 per cent of their cases by the injection method. Bratrud,[3] McKinney,[4] Rice[5] and McMillan and Cunningham[6] reported cures in from 83 to 92 per cent of their cases. In contrast to such results, Burdick and Coley[7] of New York submitted statistics showing unsuccessful results in 96 per cent of their cases. Many surgeons when interviewed emphatically state, without quoting any personal experience, that the injection method is theoretically unsound and unsafe and from the practical standpoint is worthless in the treatment of hernia.

An endeavor to evaluate this method was approved by the research committee of the Mount Zion Hospital, San Francisco, in February 1934. A planned and systematic investigation of the treatment of hernia by the introduction of irritant chemicals into fascial planes was begun. Experimental animals were used for study of the reactions of the proliferative tissue to various solutions, and the biochemical properties of such solutions were critically analyzed. A scientific study of the construction and application of trusses was made, and a special hernia clinic was established in the outpatient department. A careful, detailed recording and follow-up system was instituted, from which 23,000 items were analyzed for this report. We treated the patients ourselves. All clinical observations were made with the attitude of comparing the results with those for years obtained with our operative treatment of rupture.

During the past few years we have submitted progressive reports of this work.[8] It is our purpose in this paper to present certain definite conclusions which

From the Department of Surgery, Mount Zion Hospital.

Read in the Surgical Section of the General Scientific Meetings at the Eighty-Ninth Annual Session of the American Medical Association, San Francisco, June 14, 1938.

1. Mayer, Ignatz: Treatment of Inguinal Hernia by Subcutaneous Injections, M. J. & Rec. **131**: 90 (Jan.) 1930.
2. Wyss, Franz: Treatment of Inguinal Hernia by Alcoholic Injections, Schweiz. med. Wchnschr. **59**: 85 (Jan.) 1929.
3. Bratrud, A. F.: The Ambulant Treatment of Hernia, Ann. Surg. **105**: 324 (March) 1937.
4. McKinney, F. S.: An Evaluation of the Results of the Injection Treatment of Inguinal Hernia, Ann. Surg. **105**: 338 (March) 1937.
5. Rice, C. O.: The Injection Treatment of Hernia, Ann. Surg. **105**: 343 (March) 1937.
6. McMillan, W. M., and Cunningham, D. R.: The Injection Treatment of Reducible Hernia, J. A. M. A. **106**: 1791 (May 23) 1936.
7. Burdick, C. G., and Coley, B. L.: Injection Method of Treating Hernia, Ann. Surg. **106**: 322 (Sept.) 1937.
8. Harris, F. I., and White, A. S.: The Injection Treatment of Hernia, Surg., Gynec. & Obst. **63**: 201-211 (Aug.) 1936; The Injection Treatment of Hernia: Its Experimental Basis, California & West. Med. **45**: 382-385 (Nov.) 1936.

we believe will reconcile the wide divergence of opinion which has existed as to the value of the injection method of treating hernia.

From 1933 to 1938, 573 patients with hernia of all types have presented themselves for treatment (table 1). Of this number 236, or 41 per cent, were treated by the injection method, ninety-one, or 16 per cent, by operation, and 246, or 43 per cent, by the

TABLE 1.—*Type of Treatment According to Diagnosis in Total Series (573 Cases)*

Type of Hernia	Injection	Surgical	Mechanical
Pure indirect inguinal	118	35	149
Combined indirect and direct inguinal	39	14	19
Pure direct inguinal	33	10	21
Recurrent postoperative inguinal	29	4	17
Umbilical	5	5	14
Femoral	3	12	10
Ventral	9	11	16
Number	236	91	246
Percentage	41	16	43

TABLE 2.—*Reasons for Not Using Injection Method*

	Number of Cases	Percentage of Total Series
Hernia not reducible	38	6.6
Satisfactory truss could not be fitted	55	9.6
Patient preferred operation	53	9.4
Treatment not advised because of age or infirmity	39	6.8
Patient satisfied with truss wearing; refused any treatment	132	36.6
Injection used	236	41.0
Total	573	100%

application of trusses. Only 41 per cent of the cases could be utilized for this clinical investigation, despite the fact that in this especially established clinic for the study of the injection method we tried to treat as many patients as possible by this means. An analysis of the remaining 59 per cent of the cases shows the limitation of the possible application of this procedure (table 2).

From a study of table 2 it may be seen that in 6.6 per cent of the cases injection could not be considered because of lack of complete reducibility of the hernia, that in 9.6 per cent of the cases it could not be contemplated because of inability to fit a satisfactory truss, that 9.4 per cent of the patients preferred operation as an easier method of treatment and that 6.8 per cent of the patients were considered unsuitable for this method because of infirmity, old age or poor tissues. It is interesting that the mechanical method of relieving rupture by the simple application of a retaining truss was sufficient to satisfy the needs of 26.6 per cent of the patients referred to this clinic. In this paper we are interested primarily in a study of the 236 cases in which treatment was by the injection method.

The first conclusion derived from our experience is that this method of treatment has not been responsible for a single death. The complications which have occurred have been reported in detail elsewhere.[9] There has been no atrophy or sloughing of the testicles and no peritonitis or formation of abscess. No impotence has resulted. Complications such as transient swelling of the cord, hydrocele of the cord, epididymitis, transient shock due to intraperitoneal injection of the solution and dermatitis of the skin under the truss pad have all been of minor significance and have not required hospitalization in any case. Even these complications were noted mainly in our early experience.

We are convinced that in the hands of experienced surgeons familiar with the principles and technic the injection method is absolutely safe and devoid of serious complications. We are convinced that there is a place for this method in the treatment of hernia. We are also convinced, however, that the end results are not comparable to those obtained with surgical procedures. We are convinced that many of the published enthusiastic reports have not been subjected to sufficient critical analysis and follow-up. We believe that it is of the utmost importance to publicize to the medical profession and to the public exactly what can be expected in the way of permanent cures from the injection method.

We define a cure of a hernia as the complete absence of the protrusion on examination as well as the absence of any bulge in the musculature on straining. A cure also implies that the patient has no need to wear a mechanical device such as a truss. On the basis of this definition our figures show that 134 patients, or approximately 57 per cent of the total of 236, can be said to be cured. These patients have been examined from six months to three years after the removal of the truss

TABLE 3.—*Present Status of Patients Treated by Injection*

	Number of Cases	Percentage of Cases
Cures	134	56.8
Possible cures	66	27.9*
Known failures	36	15.3
	236	100%
Length of time since truss was removed after cured		
6 months to 1 year	33	24
1 year to 2 years	62	46
2 years to 3 years	40	30
	134	100%

* Still wearing trusses.

TABLE 4.—*End Results in Unselected Cases in Relation to Type of Hernia*

Type of Hernia	Number of Cases	Number of Cures	Percentage of Cures	Number of Possible Cures	Percentage of Possible Cures	Number of Failures	Percentage of Failures
Pure indirect inguinal	118	96	81.4	11	9.3	11	9.3
Combined indirect and direct inguinal	39	15	39.1	19	48	5	12.9
Pure direct inguinal	33	9	26.8	17	52	7	21.2
Recurrent postoperative inguinal	29	6	21.5	15	52	8	27.5
Umbilical	5	5	100	..	....	..	....
Femoral	3	1	33.3	..	....	2	66.7
Ventral	9	2	22.6	4	44	3	33.4
	236	134	56.8	66	27.9	36	15.3

(table 3). Sixty-six patients, or 28 per cent, are listed as possibly cured. By this we mean that they are still wearing a truss, either because we advised them to or because they do not feel sufficiently secure to go without one. In this group there is no objective evidence of hernial protrusion, but the result can be classified only as a possible cure. The treatment of thirty-six patients

9. Harris, F. I., and White, A. S.: Injection Treatment of Hernia, Am. J. Surg. 37: 263 (Aug.) 1937.

has been classified as a complete failure, by which we mean either that we have been unable to obtain an initial closure or have been unable to cure a recurrence. This gives a percentage of complete failures of approximately 15. Table 4 contains a detailed statement of these figures according to the type of hernia.

This figure of 15 per cent failures, which represents our final figure to date, does not give a true picture of

TABLE 5.—*Time of Recurrence After Last Injection*

Number of Cases	Percentage of Cases	Time in Months
29	36.7	0- 6
21	26.7	6-12
19	24.0	12-18
6	7.6	18-24
4	5.0	24-36

TABLE 6.—*Causes of Recurrences and Final Failures*

	Number of Recurrences	Number of Final Failures
Insufficient treatment	22	0
Improper truss	3	3
Refusal of patient to cooperate	8	8
Poor proliferative response	16	7
Obesity	6	4
Large size of hernia	2	2
Inability to hold hernia with truss due to pain	1	1
Inability to hold hernia with truss due to cough	2	2
Inability to hold hernia with truss, cause unknown	5	5
Sliding hernia	2	2
Discontinuance of treatment due to dermatitis from truss pad	2	2
	79	36

the actual recurrences. We found that many hernias remained closed for from six to eighteen months and then recurred (table 5). These hernias were those which early in our experience seemed to be closed after a few injections and were considered cured. The fallacy of discontinuing treatment on this basis was seen when frequent recurrences developed. This may explain the poor end results reported by surgeons who have not treated their patients over a sufficient period of time. The total number of such recurrences was seventy-nine, giving an immediate recurrence rate of 34 per cent. When further courses of treatment were given, fifty-six of the hernias were finally closed and are now included among those cured, while the remaining twenty-three were added to the list of complete failures. Thus an initial recurrence rate of 34 per cent was reduced to a final figure of 15 per cent failures by persistent retreatment.

The difficulties met in this form of treatment and the reasons for the recurrences and failures are illustrated by table 6. We note that most of the recurrences can be attributed to errors in technic, such as insufficient treatment or improper fitting of the truss. The final figure of thirty-six failures represents the minimum of failures due to the inherent inadequacy of the method.

Failure by the injection method does not preclude the possibility of cure by operative means or palliative treatment by truss wearing. Table 7 shows the final disposition of our failures, and it may be pertinent to note that operation on patients previously treated by injection has not in our experience been technically difficult. It is true that at operation there is some distortion of the usual lines of cleavage in the inguinal region, and a varying amount of fibrosis may be found. Our operative experience in such cases has confirmed our experimental work on animals and has convinced us that the injection of irritant chemicals does produce binding adhesions between muscle and fascia.

In previous papers [10] we emphasized the fact that our patients with hernia were divided into two main groups, the good risk group and the poor risk group. In all fairness to the injection method we must analyze our figures again from this point of view. The good risk group is composed of patients who are good surgical risks; they are mainly under 50 or if over 50 have no serious organic disease that contraindicates operation. The poor risk group is composed largely of patients over 50 in poor general physical condition, and in our opinion its members were definitely never safe surgical risks (table 8).

There were, in the total series of 236 patients, 136 good risks. In this group 108, or 79.5 per cent, were cured; there were eleven, or 8 per cent, possible cures and seventeen, or 12.5 per cent, definite failures. In the poor risk group of 100 patients there were 26 per cent of cures, 55 per cent of possible cures and 19 per cent of definite failures. Despite the apparent small percentage of cures in the latter group, the general improvement in the comfort of the patient by reduction in the size of the hernia or by its complete elimination after the injection treatment makes the results satisfactory even though continued truss wearing is necessary.

Certain definite factors influence the results obtained. An analysis of table 9 shows that the relation of cure to the age of the patient is significant. The young patient has a better outlook for cure by the injection method than the older patient. This confirms the excellent results we recently reported in the treatment of hernia in children by the injection method.[11]

The length of time the hernia has existed (table 10) is also of considerable importance. The older the hernia the less chance of curing it, although there is

TABLE 7.—*Disposition of Final Failures*

Hernia present but ¼ to ½ previous size and easily held by truss	14
Herniaplasty done	11
Patient not improved; operation to be done later	11
	36

TABLE 8.—*End Results in Cases of Good and of Bad Risks*

Result	Good Risk		Poor Risk	
	Number	Percentage	Number	Percentage
Cures	108	79.5	26	26
Possible cures	11	8.0	55	55
Known failures	17	12.5	19	19
	136	100	100	100

an excellent outlook for improvement to the point of possible cure.

The length of the inguinal ligament, which heretofore has been entirely overlooked in the differential diagnosis of the types of inguinal hernia, is likewise of primary importance. In our early investigations we

10. Harris, F. L. and White, A. S.: The Injection Treatment of Hernia: Its Present Day Status, California & West. Med. 45:391-395 (Nov.) 1936; Injection Treatment of Hernia, Proceedings of the Pan Pacific Surgical Association, July 1937.

11. Harris, F. L. and White, A. S.: The Injection Treatment of Reducible Inguinal Hernia in Children, Arch. Pediat. 54:665 (Nov.) 1937.

found that it was of the utmost necessity in injection therapy in contrast to operative treatment to make an exact differential diagnosis of the type of inguinal hernia. Our studies led to the development of certain definite differential points which heretofore have not been described. Most important of these points is the length of the inguinal ligament as measured from the anterior-superior spine to the spine of the pubis. In

TABLE 9.—*Analysis of End Results in Relation to Age of Patient*

Age of Patients, Years	Number of Cured Patients	Percentage of Cures	Number of Possibly Cured Patients	Percentage of Possible Cures	Number of Known Failures	Percentage of Failures
0-15	18	90.0	..	....	2	10.0
15-30	28	82.3	3	8.8	3	8.8
30-40	34	72.7	5	15.1	4	12.2
40-50	39	67.2	9	15.5	10	17.3
50-60	39	66.5	15	34.7	8	18.8
60-70	5	13.3	27	72.9	5	13.8
70-80	..	....	7	63.6	4	36.4
	134		66		36	

TABLE 10.—*Analysis of End Results in Relation to Age of Hernia*

Age of Hernia	Number of Cures	Percentage of Cures	Number of Possible Cures	Percentage of Possible Cures	Number of Failures	Percentage of Failures
0-1 year	81	76.4	10	9.4	15	14.2
1-2 years	23	74.2	6	19.3	2	5.9
2-5 years	12	38.7	7	22.6	12	38.7
5-10 years	12	44.4	14	51.9	1	3.7
Over 10 years	6	14.6	29	70.8	6	14.6
	134		66		36	

a previous communication[12] it was shown that when the inguinal ligament measured less than 13 cm. the hernia was always of the pure indirect type, whereas when the length approximated 15 cm. the hernia was often found to be a combination of the indirect and the direct type. When the inguinal ligament was over 15 cm. the hernia was always of the pure direct type. Table 11 shows that the average length of the inguinal ligament in the cases in which cure resulted was 13 cm., whereas the average length in cases of possible cure and of failure was 15.2 cm. This shows the prognostic significance of the length of the inguinal ligament in the treatment of hernia by injection. Our unpublished studies lead us to believe that this measurement is of similar prognostic value in the operative cure of hernia.

With the foregoing figures and facts in mind, an evaluation of the injection method in unselected cases of hernia can be made as follows (table 12): With pure indirect inguinal hernia there is an 80 per cent chance of cure; with combined indirect and direct inguinal hernia there is only a 37 per cent chance of cure, while with pure direct inguinal hernia there is only a 30 per cent possibility of cure. Recurrent postoperative inguinal hernias show 22 per cent of cures. Reducible umbilical hernias in our experience have shown a 100 per cent chance of cure. These umbilical hernias were mainly in young children. Femoral and most incisional hernias are totally unsatisfactory for treatment by this method.

12. Harris, F. I., and White, A. S.: Length of the Inguinal Ligament, J. A. M. A. 109: 1900 (Dec. 4) 1937.

If a careful selection of cases is made according to the criteria of good risk and poor risk, as shown in table 13, the results obtained by the injection method will vary somewhat from these figures. The statistics for the good risk group will show a much higher percentage of cures and those for the poor risk group a much lower percentage. The more favorable statistics for the good risk group should be used in making a comparison between the results of the injection method and those of surgical procedures. As previously stated, the poor risk group consisted largely of patients who for various reasons could not be treated by any operative procedure. They were included in order that we might compare our total results with those generally reported by the enthusiastic supporters of the injection method.

This method of treatment entails certain practical difficulties. The results which we are reporting can be obtained only with detailed care extending over a considerable period. To both the patient and the physician the prolonged nature of the treatment has been a disadvantage which has not been emphasized. The impression has been created that this treatment is a simple office procedure which will save the patient time and money. Our experience indicates that this is not entirely true and that there is considerable annoyance and inconvenience to patient and physician if the treatment is to be properly and carefully given. Table 14 shows that the average number of dispensary or office visits was twenty-three over an average period of five months. Whereas the average number of injections was eleven, individual patients have required as many as fifty injections. Some patients have been under active treatment for over three years, necessitating over

TABLE 11.—*Length of Inguinal Ligament in Relation to End Results*

Type of Hernia	Average Length of Inguinal Ligament: Cures	Possible Cures	Failures
Pure indirect inguinal	12.5 cm.	13.5 cm.	13.5 cm.
Combined indirect and direct inguinal	14.0 cm.	15.0 cm.	15.0 cm.
Pure direct inguinal	16.0 cm.	17.5 cm.	17.0 cm.
Recurrent postoperative inguinal	14.5 cm.	14.75 cm.	14.75 cm.

Average for cured group, 13.0 cm.
Average for possible cures and known failures, 15.2 cm.

TABLE 12.—*Possibilities of Treatment in Unselected Cases of Inguinal Hernia*

Type of Hernia	Approximate Result: Cures	Wearing Truss	Failures
Pure indirect inguinal	80%	10%	10%
Combined indirect and direct inguinal	37%	50%	13%
Pure direct inguinal	30%	50%	20%
Recurrent postoperative inguinal	22%	50%	28%

100 dispensary visits. For these reasons it is not practical from an economic standpoint to recommend this method in compensation cases.

Considerable discussion and confusion exist as to certain salient points in the technic of the treatment. The importance of the chemical solution used has been overemphasized, largely because of commercial advertising. It has been our experience that many excellent

properly prepared solutions are commercially available. In general they may be divided into two classes, those containing tannic acid in alcohol and those containing a fatty acid base. Experimental and clinical investigations have shown little difference in the fibrosis produced by the two types.[13] The fatty acid solutions have the practical advantage of a somewhat more simple application. The solutions used in the treatment of varicose veins are definitely dangerous and contraindicated in this technic.

TABLE 13.—*Possibilities of Treatment in Selected Cases of Good and of Poor Risks*

Type of Hernia	Approximate Result in Cases of Good Risks	Approximate Result in Cases of Poor Risks
Pure indirect inguinal.....	87% cures —— wearing truss 13% failures	53% cures 43% wearing truss 4% failures
Combined indirect and direct inguinal	70% cures 11% wearing truss 11% failures	20% cures 66% wearing truss 14% failures
Pure direct inguinal.....	56% cures 35% wearing truss 9% failures	10% cures 62% wearing truss 29% failures
Recurrent postoperative inguinal	59% cures 41% wearing truss 9% failures	—— cures 58% wearing truss 42% failures

Probably the most important single factor contributing to a successful result is the application of a scientifically correct truss. The importance of this far outweighs the value of any one solution over another. The selection and application of the truss necessitate accurate differential diagnosis of the type of inguinal hernia and require individual judgment for each patient. Probably the greatest obstacle to the popularization of this method lies in the general lack of knowledge on the part of surgeons of the principles of the construction and fitting of trusses.[14] It is our firm conviction that there can be no successful treatment of hernia by injection unless the patient is fitted with a proper truss.

Summing up our experience briefly, we believe that, if the object of treatment is cure, the injection method should be limited in its use to selected patients with pure indirect inguinal hernias. They should be young patients who are good risks, with recent hernial development, whose inguinal ligaments measure about 13 cm. Umbilical hernias in children offer an excellent field for this method. For persons who are good risks but whose inguinal hernia is of the combined indirect and direct type or the pure direct type, the results, while definitely not as favorable as those obtained with surgical methods, are sufficiently good to warrant recommendation of injection treatment when, for economic or personal reasons, operation is not possible. However, such patients should be made fully cognizant of the fact that the possibility of cure is less with the injection method than with operation. Recurrent postoperative inguinal hernias, which so often are the bane of the surgeon and the patient, are well worth treatment by this means. For, even if a cure is not obtained, improvement to the point of comfortable truss wearing can be promised and is usually sufficient to satisfy a patient who has had two or three operative experiences.

If the object of the treatment is to offer the patient a possible cure or improvement with continued truss wearing, the field of usefulness of the injection method can be considerably extended. Many patients have hernias that produce symptoms but are denied operation because of their poor general condition. The injection method should be welcomed by surgeons as a valuable means of treating such patients.

Our experience has satisfied us that the prejudices against the injection method have been founded on theoretical misconceptions. On the other hand, the unwarranted enthusiasm for the method has been founded on reports of surgeons who have used the procedure but have failed to follow up critically their end results. The statistics presented in this paper offer an appraisal of the possibilities of the treatment of hernia by injection.

SUMMARY AND CONCLUSIONS

To evaluate the injection treatment in a study of 573 cases of hernia of all types, only 41 per cent, or 236 cases, could be utilized.

No serious complications or deaths occurred.

The 236 patients treated by injection have been followed up for from six months to three years after the completion of treatment. There were 57 per cent of cures, 28 per cent of possible cures and 15 per cent of complete failures.

This method of treatment if the object is cure should be limited to a small group of patients with pure indirect inguinal hernia. This group consists of young persons with recent hernial development whose inguinal ligament measures about 13 cm.

Reducible umbilical hernia in children can also be cured by the injection method.

The field of usefulness of the injection method can be considerably extended if the object is possible cure with continued truss wearing.

Recurrent postoperative inguinal hernia should be given a trial treatment by the injection method.

TABLE 14.—*Number of Office Visits per Patient*

Office Visits per Patient		Length of Time of Active Treatment	
Number of Patients	Number of Office Visits	Number of Patients	Number of Months of Active Treatment Not Counting Follow-Up
7	0-10	180	1- 6
125	10-20	39	6-12
66	20-30	12	12-18
36	30-102	5	18-60
236		236	
Average number of office visits, 23		Average length of time of active treatment, 5.1 months	

This method of treatment is not simple and necessitates detailed care over a considerable period.

The most important single factor in the technic is the selection and application of a truss.

In general, the end results of the treatment of hernia by injection are not comparable to those obtained by operation. These results, however, are sufficiently good to recommend this treatment when operation cannot be considered because of economic, personal or physical reasons.

450 Sutter Street—516 Sutter Street.

13. Harris, F. I.; White, A. S., and Biskind, G. R.: Observations on Solutions Used for Injection Treatment of Hernia, Am. J. Surg. **29**: 112 (Jan.) 1938. Manoil, Lazarus: Histologic Effects of Various Sclerosing Solutions Used in the Injection Treatment of Hernia, Arch. Surg. **36**: 171-189 (Feb.) 1938.

14. Harris, F. I., and White, A. S.: The Truss in Relationship to the Diagnosis and Injection Treatment of Inguinal Hernia, Am. J. Surg. **36**: 443 (May) 1937.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

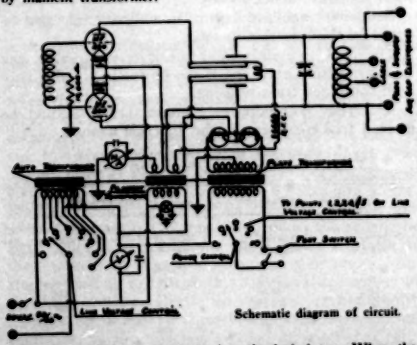
SUPER FISCHERTHERM, MODEL 114-A-3 ACCEPTABLE

Manufacturer: The Fischer Corporation, 673 Ivy Street, Glendale, Calif.

The Super Fischertherm Short Wave Diathermy Unit, Model 114-A-3, is recommended for medical and surgical use in the office or hospital. This unit is similar to the Council accepted Super Fischertherm Unit, Model 114-A (THE JOURNAL, Dec. 18, 1937, p. 2064) except for the addition of higher powered tubes with necessary wiring changes and increased output, according to the firm. The cabinet housing is the same for the two units. Standard equipment includes inductance cable, cuff and pad electrodes and surgical accessories for coagulation, desiccation and cutting purposes. Air spaced electrodes and supporting arms are optional. No evidence was submitted concerning the ability of the unit to supply deep heat with air-spaced technic.

Super Fischertherm 114-A-3.

The circuit consists of two vacuum power tubes and two rectifier tubes in a simple arrangement. The output circuit is tuned by a split stator condenser. In adjusting for line voltage, an ohmite tap switch and a variable condenser resonance control are used. The newer model, 114-A-3, employs HF-300 Amperex tubes instead of HF-200 tubes. This change in tubes makes it necessary to use one more turn in the tank coil and slight change in filament voltage; i. e., 12 volts now delivered by filament transformer.



Schematic diagram of circuit.

The firm submitted the following physical data: When the machine was operated continuously for two hours at full load, the power input was approximately 1,990 watts. The average high frequency power output was 762 watts as measured by the calorimeter method. No part of the machine was unduly hot after the two hour run.

These data were later substantiated by tests made for the Council. The transformer temperature rise and the rise at various levels within the cabinet were within the limits of safety prescribed by the Council. The final temperature of the transformer when operating on lamp load of 520 watts was 79 C. The input was 1,540 watts. Burns may occur with this unit as with other short wave units but are less likely to occur than with conventional diathermy. A filter to inhibit feed-back of radio frequency current into the power line is included in the equipment.

In order to substantiate heating claims made for the unit, the firm submitted tests performed at a reliable laboratory. Four healthy male medical students served as subjects for these tests. Eight experiments each were performed with the inductance cable, cuff and pad technics. Temperature measurements were made with the thermocouple in the anterior portion of the thigh at depths of one-eighth, three-fourths and 2 inches or on the bone. These depths were measured from the skin straight in; that is, normal to the surface of the skin. The technic employed in the measurements was that recommended by the Council on Physical Therapy.

In applying the inductance cable approximately 1½ inches of bath toweling was wrapped around the thigh and held in place by approximately four wraps of the inductive cable. The averages for eight observations with this technic are given in the accompanying tables.

Average of Eight Observations

Deep Muscle		Subcutaneous		Skin		Oral	
Initial	Final	Initial	Final	Initial	Final	Initial	Final
Coil Technic							
98.5	106.9	97.1	105.6	93.9	101.7	98.4	99.5
Cuff Technic							
97.9	106.0	95.9	106.5	93.5	102.7	98.2	99.4
Pad Technic							
98.4	104.1	97.2	102.3	93.9	99.7	98.4	99.1

These data were accepted by the Council. The unit was investigated clinically for the Council and reported to function satisfactorily.

In the advertising copy submitted, the output is stated to be 762 watts as measured by the calorimeter method. That the physician may compare this value with the value obtained by the commonly used method, the Council lamp load output of 520 watts is also given.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Super Fischertherm, Model 114-A-3, for inclusion in its list of accepted devices.

O. E. M. FACE TENT WITH OXY-ATOR ACCEPTABLE

Manufacturer: Oxygen Equipment Manufacturing Company, Inc., 247 East Fifty-Sixth Street, New York.

The O. E. M. Face Tent is recommended for intermittent oxygen therapy administered to conscious and cooperative patients. It is a boxlike mask, made of transparent plastacele (cellulose acetate) which forms a projection over the patient's nose, mouth and chin and is open at the bottom. It may be fitted to any adult face by molding the pliant aluminum framework. This is wrapped in moleskin. Malleable aluminum ear pieces, with loops at the ends, hold it in place. Tapes that tie back of the head may be used for the same purpose.

O. E. M. Face Tent with Oxy-Ator

In conjunction with the face mask, an Oxy-Ator is supplied to increase the efficiency of the equipment. This device attaches directly to the regulator. As oxygen is administered (in any flow from 6 to 12 liters per minute) the Oxy-Ator draws air into the circuit from the outside atmosphere, forming an air-oxygen mixture.

Oxygen is supplied by means of this rubber tubing, perforated on the portion inside the mask to direct the flow upward toward the center of the nostril. During expiration, oxygen collects in the mask and is forced out through the opening at the bottom. It is dry when admitted, since it has not passed through the water bottle. However, the firm claims that enough moisture from the exhaled air remains in the mask to provide a certain amount

of humidity. According to the firm, there is an almost immediate build-up of oxygen concentration in the face tent. The firm believes that additional cooling is not necessary if a continuous flow of 4 or more liters of oxygen is employed.

The unit was investigated clinically in the following manner:

The face tent and Oxy-Ator were used as directed and certain oxygen concentrations were obtained. The samples taken from patients and normal subjects were obtained with a small catheter from the oral pharynx at the end of forced expiration. The presence of carbon dioxide concentration approaching 4 to 5 per cent is an indication that one has a sample of alveolar air. Of course, the oxygen percentages in this case are approximately 4 per cent less than the concentration that enters the lungs. This carbon dioxide determination has nothing to do with rebreathing of carbon dioxide from the mask. These analyses were determined on samples taken with the Oxy-Ator set to pick up the maximum amount of air.

Analyses of Oxygen-Air Mixtures from Tube Connected to Oxy-Ator

Rate of Oxygen Flow on Gage	Oxygen	Increased Rate of Flow Due to Air Added Through Oxy-Ator
4 liters oxygen per minute	92%	4.4 liters per minute
6 liters oxygen per minute	87%	7.1 liters per minute
8 liters oxygen per minute	86%	9.6 liters per minute

CASE 1.—Normal healthy adult male with mask carefully fitted to face, subject sitting:

Oxygen Flow	Oxygen	Carbon Dioxide
4 liters per minute	25.6%	4.6%
6 liters per minute	33.0%	4.8%
8 liters per minute	48.8%	4.8%

The mask on the same subject was readjusted and the delivery tube changed so that it directed gas onto the upper lip in front of the nose:

Oxygen Flow	Oxygen	Carbon Dioxide
4 liters per minute	37.6%	4.8%
6 liters per minute	47.2%	4.8%
8 liters per minute	54.4%	4.6%

Comments: With a flow of 6 liters per minute, the mask was comfortable for a period of two hours. There was some tendency toward drying of the nasal mucous membranes. There was no clinical evidence of accumulated carbon dioxide as judged by observation of breathing. Analysis for carbon dioxide of samples taken during inspiration showed carbon dioxide from 0.2 to 0.4 per cent.

CASE 2.—Woman with hypertensive heart disease, decompensated, using the face tent and Oxy-Ator:

Oxygen Flow	Oxygen	Carbon Dioxide
6 liters per minute	68.8%	3.4%
8 liters per minute	76.0%	3.2%

These analyses were checked twice. This was the highest oxygen concentration obtained at any time.

CASE 3.—Patient dyspneic from pulmonary infarct and cardiac failure:

Oxygen Flow	Oxygen	Carbon Dioxide
6 liters per minute	43.8%	3.8%
8 liters per minute	58.0%	4.0%

This patient complained of the mask being too warm. Eight liters per minute was required to give him any relief.

This mask is useful, in the opinion of the Council, for the intermittent type of oxygen therapy. It can be kept on the face if the patient is quiet, conscious and cooperative. When properly fitted to the face, it delivers a high concentration of oxygen in most cases but is variable in efficiency depending on the type of breathing and how it is applied to the face. The use of a device such as the Oxy-Ator appears to increase the efficiency of the face mask. However, a 6 liter flow of the air-oxygen mixture is necessary to eliminate the accumulation of carbon dioxide in the mask when used with Oxy-Ator. The hazard of very high oxygen concentration used over long periods of time must not be overlooked.

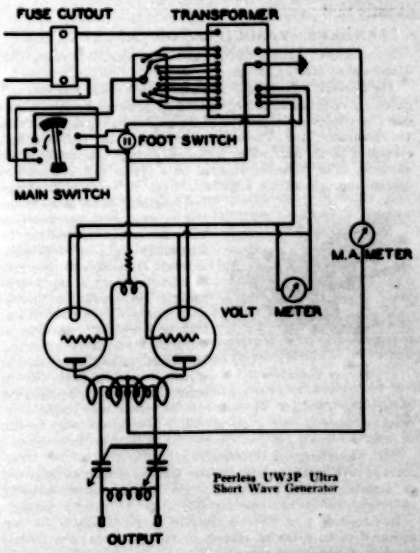
In view of the foregoing report, the Council on Physical Therapy voted to accept the O. E. M. Face Tent and the Oxy-Ator for inclusion in its list of accepted devices.

PEERLESS ULTRA SHORT WAVE UNIT, MODEL UW3P, ACCEPTABLE

Manufacturer: Peerless Laboratories, Inc., 115 East Twenty-Third Street, New York.

The Peerless Ultra Short Wave Unit, Model UW3P, is recommended for medical and surgical use. Pads, cuffs, inductance coil, treatment arms for air-spaced electrodes and metal electrodes are part of the standard equipment. Surgical accessories for cutting, desiccation and coagulation are available on request. The shipping weight of the machine is approximately 105 pounds.

Operating at a wavelength of 6 meters, it employs a two tube push-pull oscillating circuit. One branch of the patient's circuit



is inductively coupled and the other is capacitatively coupled to the oscillating circuit. The two branches of the patient's circuit are tuned simultaneously by means of a double condenser with parallel plates. A switching arrangement incorporated in the machine provides correct operating voltages to filament, plates and grids regardless of line voltage variations within a range of from 105 to 135 volts in a parallel line.

The unit has an input of approximately 700 watts. The output, as measured by lamp load, photoelectric cell and wattmeter, is approximately 325 watts. Temperature rise of the transformer and at various levels within the cabinet when operated at full load for approximately two hours was within the limits

prescribed for safety. The unit is licensed by the Electrical Research Products Corporation. Filters are to be included to prevent radio interference.

In addition, evidence was submitted by the firm to substantiate claims made for the heating ability of the unit when applied to the living human thigh. A reliable investigator performed tests with air-spaced electrodes. The technical procedure for making the tests was that recommended by the Council on Physical Therapy. Air-spaced circular electrodes, with average diameter

Average of Six Observations, Air-Spaced Technic

Deep Muscle Temperature		Oral Temperature	
Initial	Final	Initial	Final
99.1	104.7	98.7	98.9

of 4½ inches, were placed approximately 1¼ inches from the skin and 10 inches apart center to center. Six observations on the air-spaced technic only were given consideration and the averages are shown in the accompanying table.

The apparatus was subjected to clinical study by a reliable investigator, who tried it with air-spaced electrodes and reported that it gave satisfactory service.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Peerless Ultra Short Wave Unit, Model UW3P, for inclusion in its list of accepted apparatus.

SANDERS VASOCILLATOR ACCEPTABLE

Manufacturer: American Hospital Supply Corporation, 1086 Merchandise Mart, Chicago.

The Sanders Vasocillator or Sanders Bed (as it was formerly called) is designed to aid circulation in peripheral vascular diseases by changing the posture of the patient at regular intervals. In appearance, the Vasocillator looks like an ordinary bed, consisting of an iron frame with coil springs supporting a felt mattress. The frame is mounted on a cradle and is geared to operate through an arc adjustable from 10 to 24 inch swings (as measured at the head of the bed in relation to the floor) so that each end of the bed may be alternately high, in midposition or low. If desired, the bed may be held stationary at any desired angle. The oscillating mechanism, powered by a quiet motor, may be regulated according to the prescription of the physician. Its period of oscillation can be adjusted to take from one to seven minutes for a complete cycle. The physician, the nurse or the patient may regulate the time to complete each cycle at will. The patient may lie flat or with the knees and feet elevated in relation to the body.

Sanders Vasocillator.

The Vasocillator is recommended by the firm for the treatment of peripheral vascular diseases such as threatened gangrene of diabetic or arteriosclerotic origin and of thrombo-angiitis obliterans without extreme capillary stasis (Buerger's disease).

Investigated in a clinic acceptable to the Council, the bed appeared to be a useful adjunct in the treatment of a limited number of peripheral vascular diseases due to capillary stasis, particularly in giving exercises similar to Buerger's exercises to individuals unable to perform active movements. The patients learn to sleep in the bed, thus continuing the exercise over long periods including day and night.

In the opinion of the Council, this bed has a limited therapeutic usefulness and no more can be expected from it than can be achieved by the conventional Buerger exercises. The Council points out that this oscillating bed is indicated for use in conjunction with other methods of treatment.

In view of the foregoing report, the Council voted to accept the Sanders Vasocillator for inclusion in its list of accepted apparatus.

Council on Pharmacy and Chemistry

REPORT OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

VI-VEX NOT ACCEPTABLE FOR N. N. R.

Vi-Vex, manufactured by the Vi-Vex Manufacturing Company, Washington, D. C., was presented to the Council for consideration, with the information that the product consisted of 2 grains of phenacetin, 5 grains salicin, and ⅛ grain caffeine citrated. The product is claimed to be relief for colds, grip, headaches, sinus and neuralgia if used "as prescribed by your physician or by the directions."

Such a product is in conflict with the rules of the Council; it consists of an unoriginal and also irrational mixture of well known drugs whose actions are also well known; the proprietary name is unwarranted and gives no information as to the composition of the product.

Vi-Vex is not a relief for all cases of colds, grip, headaches, sinus infection and neuralgia, and the advice on the label that if the case has progressed "take one every four hours" is an invitation to indiscriminate self medication. There is no reason why acetophenetidin should be combined with salicin (a salicyl preparation) in fixed proportions. If a physician desires to give an antipyretic combined with citrated caffeine it is his duty to prescribe it in the proportion indicated by the individual case.

The Council declared Vi-Vex unacceptable for inclusion in New and Nonofficial Remedies because it is an unscientific mixture sold with unwarranted and unestablished claims under an objectionable proprietary name.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

PROTAMINE ZINC INSULIN (See New and Nonofficial Remedies, 1938, p. 338).

Protamine, Zinc and Iletin (Insulin, Lilly) (See New and Nonofficial Remedies, 1938, p. 338).

The following dosage form has been accepted:

Protamine, Zinc & Iletin (Insulin, Lilly), 80 units, 10 cc.: Each cubic centimeter contains 80 units of insulin, together with protamine and approximately 0.16 mg. of zinc.

Protamine Zinc Insulin-Mulford (See New and Nonofficial Remedies, 1938, p. 338).

The following dosage form has been accepted:

Protamine Zinc Insulin-Mulford, 80 units, 10 cc.: Each cubic centimeter contains 80 units of insulin, together with protamine and approximately 0.16 mg. of zinc.

Protamine Zinc Insulin-Squibb (See New and Nonofficial Remedies, 1938, p. 339).

The following dosage form has been accepted:

Protamine Zinc Insulin-Squibb, 80 units, 10 cc.: Each cubic centimeter contains 80 units of insulin, together with protamine and approximately 0.16 mg. of zinc.

STAPHYLOCOCCUS TOXOID (See New and Nonofficial Remedies, 1938, p. 422).

The National Drug Co., Philadelphia.

Staphylococcus Toxoid (The National Drug Co.).—Prepared from toxin produced by selected strains of Staphylococcus aureus. The toxin, to which formaldehyde is added, is kept at 37 C. during the period necessary for the toxin to be converted into toxoid. The toxin is injected intradermally into rabbits to determine the smallest dose which will cause necrosis of the skin. After detoxification it must not produce necrosis in a dose of 0.2 cc. The toxin is tested for its hemolysing action on rabbit cells; it must have a hemolytic test (L. H.) dose of 0.075 cc. or less. The detoxified toxin (toxoid) in a 1 cc. dose must not completely hemolyze a 1 per cent suspension of washed rabbit cells. Mice given intraperitoneal injections of 0.5 cc. doses of undiluted toxoid must survive four days; guinea pigs receiving 2 cc. of undiluted toxoid subcutaneously must have no local or general adverse symptoms during the period of observation (one week); rabbits receiving 3 cc. of toxoid per kilogram of

weight, intravenously, must show no toxic symptoms within four days. Sterility tests are made by culture of toxoid in Smith fermentation tubes. The formaldehyde solution must not exceed 0.4 per cent by volume, 1 cc., 2 cc. and 3 cc. Potency tests are made in accordance with the requirements of the National Institute of Health: three doses of staphylococcus toxoid given to rabbits intramuscularly at weekly intervals must produce at least 3 units of staphylococcus antitoxin per cubic centimeter of rabbit serum, as measured by the hemolytic method.

Staphylococcus toxoid (The National Drug Co.) is marketed in two dilutions: Dilution No. 1, 5 cc. ampul-vial containing in each cubic centimeter the equivalent of 100 minimum necrotizing doses of the original toxin; and Dilution No. 2, 5 cc. ampul-vial containing in each cubic centimeter the equivalent of 1,000 minimum necrotizing doses of the original toxin.

CEVITAMIC ACID (See New and Nonofficial Remedies, 1938, p. 480).

The following dosage form and brand have been accepted:

Mead's Cevitamic Acid Tablets: Each tablet contains 25 mg. cevitamic acid equivalent to 500 international units of vitamin C.
Prepared by Mead Johnson and Co., Evansville, Ind.

Cebione (See New and Nonofficial Remedies, 1938, p. 481).

The following dosage forms have been accepted:

Sealed Tubes Cebione, 0.5 Gm.
Sealed Tubes Cebione, 1.0 Gm.

DIGITALIS (See New and Nonofficial Remedies, 1938, p. 186).

Capsules Digitalis Leaf, 0.1 Gm. (1½ grains)-Abbott: Each capsule represents 1 U. S. P. unit.
Prepared by Abbott Laboratories, North Chicago, Illinois.

ANTIANTHRAX SERUM (See New and Nonofficial Remedies, 1938, p. 394).

Jensen-Salsbery Laboratories, Inc., Kansas City, Mo.

Antianthrax Serum.—Prepared from cattle subjected to intradermal, followed by increasing doses of intravenous, injections of live cultures of Bacillus anthracis. Contains 0.5 per cent phenol as preservative. Marketed in vials containing 100 cc.

Dosage.—Initial doses of from 50 to 100 cc. may be administered intravenously at three to twelve hour intervals as indicated; for subcutaneous injection, from 3 to 12 cc. into tissues about local lesions.

EPHEDRINE HYDROCHLORIDE (See New and Nonofficial Remedies, 1938, p. 227).

EPHEDRINE HYDROCHLORIDE-LAKESIDE.—A brand of ephedrine hydrochloride-U. S. P.

Manufactured by the Lakeside Laboratories, Inc., Milwaukee, Wis. No U. S. patent or trademark.

Solution Ephedrine Hydrochloride-Lakeside, 3%: It is preserved with chlorbutanol, 0.5 per cent.

EPHEDRINE SULFATE (See New and Nonofficial Remedies, 1938, p. 228).

EPHEDRINE SULFATE-LAKESIDE.—A brand of ephedrine sulfate-U. S. P.

Manufactured by the Lakeside Laboratories, Inc., Milwaukee, Wis. No U. S. patent or trademark.

Ampoules Ephedrine Sulfate-Lakeside, 0.05 Gm. (¾ grain), 1 cc.
Capsules Ephedrine Sulfate-Lakeside, 0.025 Gm. (⅜ grain).
Capsules Ephedrine Sulfate-Lakeside, 0.05 Gm. (¾ grain).

STRONG PROTEIN SILVER (See New and Nonofficial Remedies, 1938, p. 443).

SILVER PROTEIN STRONG-MERCK.—A brand of strong protein silver-U. S. P.

Manufactured by Merck & Co., Rahway, N. J. No U. S. patent or trademark.

ETHYL AMINOBENZOATE (See New and Nonofficial Remedies, 1938, p. 80).

BENZOCAINE-MERCK.—A brand of ethyl aminobenzoate-U. S. P.

Manufactured by Merck & Co., Rahway, N. J. No U. S. patent or trademark.

BISMUTH AND POTASSIUM TARTRATE (See New and Nonofficial Remedies, 1938, p. 146).

BISMUTH AND POTASSIUM TARTRATE-MERCK.—A brand of bismuth and potassium tartrate-U. S. P.

Manufactured by Merck & Co., Rahway, N. J. No U. S. patent or trademark.

CARBROMAL (See New and Nonofficial Remedies, 1938, p. 155).

CARBROMAL-MERCK.—A brand of carbromal-U. S. P.

Manufactured by Merck & Co., Rahway, N. J. No U. S. patent or trademark.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

LARSEN'S "FRESHLIKE" BRAND STRAINED VEGETABLE SOUP

Manufacturer.—The Larsen Company, Green Bay, Wis.

Description.—Canned, strained vegetable soup containing carrots, potatoes, barley, tomatoes, peas, green beans, celery, spinach and salt.

Manufacture.—Selected fresh vegetables are cleaned, trimmed, peeled, mixed with whole barley grains and salt, vacuumized, cooked to proper softness and texture, and double screened. The mixture is filled into cans, sealed under vacuum, and heat processed.

Analysis (submitted by manufacturer).—Moisture 85.3%, total solids 14.7%, ash 1.1%, fat (ether extract) 0.2%, protein (N × 6.25) 2.2%, crude fiber 0.5%, carbohydrates other than crude fiber (by difference) 10.7%, calcium (Ca) 0.027%, phosphorus (P) 0.157%, iron (Fe) 0.0009%.

Calories.—0.5 per gram; 14 per ounce.

CLAPP'S CHOPPED APPLE SAUCE

Manufacturer.—Harold H. Clapp, Incorporated, Rochester, N. Y.

Description.—Canned apple sauce prepared from chopped apples, sweetened with sugar.

Manufacture.—Baldwin apples are graded, washed to remove spray residues, again washed, peeled, cored, inspected, trimmed by hand, water sprayed and mechanically chopped. The apples are weighed and a definite amount of sugar is added. The mixture is heated in an atmosphere of steam, adjusted to standard consistency, filled into cans, sealed, processed under pressure in steam retorts and cooled.

Analysis (submitted by manufacturer).—Moisture 85.8%, total solids 14.2%, ash 0.4%, fat (ether extract) 0.7%, protein (N × 6.25) 0.1%, crude fiber 2.1%, carbohydrates other than crude fiber (by difference) 10.9%.

Calories.—0.5 per gram; 14 per ounce.

MRS. PALEY'S BABY FOOD—STRAINED BEEF

Manufacturer.—Paley-Sachs Food Company, Houston, Texas.

Description.—Canned sieved scraped beef, U. S. inspected and passed by the Department of Agriculture. Slightly seasoned with salt.

Manufacture.—Lean beef, U. S. inspected and passed by the Department of Agriculture, is scraped to remove tough sinew, and ground. Definite proportions of water and salt are added and the mixture is heated to from 71 to 77 C., strained, filled into cans, sealed and heat processed at 116 C. for one hour.

Analysis (submitted by manufacturer).—Moisture 82.5%, total solids 17.5%, ash 1.6%, fat (ether extract) 0.5%, protein (N × 6.25) 14.4%, carbohydrates (by difference) 1.0%.

Calories.—0.66 per gram; 19 per ounce.

CELLU BRAND TOMATO JUICE

Distributor.—Chicago Dietetic Supply House, Inc., Chicago.

Description.—Canned tomato juice; no added salt.

Manufacture.—Manufactured in essentially the same manner as Kemp's Sun-Rayed Brand Tomato Juice (THE JOURNAL, Dec. 13, 1930, p. 1835).

Analysis (submitted by manufacturer).—Moisture 94.4%, total solids 5.6%, ash 0.4%, fat (ether extract) 0.3%, protein (N × 6.25) 1.0%, reducing sugar as invert 3.6%, sucrose (by copper reduction) 0.1%, crude fiber 0.2%, carbohydrates other than crude fiber (by difference) 3.7%.

Calories.—0.22 per gram; 6 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 26, 1938

ASPHYXIA OF THE NEWBORN

According to the statistics of the birth registration area about 80,000 infants die annually at birth in this country; 30,000 more die on the first day from causes which, almost without exception, are of natal origin. For every hundred babies born alive there are five, or one in twenty, that die within the first twenty-four hours of extra-uterine life. As Yandell Henderson pointed out, the first quarter of an hour after birth is the most dangerous period of life. Its mortality is as great as that of any subsequent month. The principal causes of infant mortality during the first twenty-four hours are prematurity, cerebral hemorrhage and asphyxia. These factors are so interrelated that it is impossible to establish precisely their relative importance. Intra-uterine pneumonia due to aspiration of amniotic fluid, plus a bacterial factor, are responsible for a certain number of deaths and, rarely, drugs administered to the mother.

Apnea of the newborn naturally demands consideration of the mechanism which initiates the respiration shortly after the fetus is born and the cord is clamped. The mechanical theory of Preyer that the reflex stimulation of the trauma of labor acts as a stimulant to the respiratory center is contradicted by everyday clinical observations. Rough palpation, attempts at manual version or application of forceps do not initiate breathing as long as the fetus remains in utero with the placental circulation intact. The mechanical theory led to the establishment of the time honored and not infrequently vicious methods of resuscitation, such as slapping, swinging or plunging the infant into an ice cold bath. Ahlfeld delivered several women in a warm saline bath and found that respiration began as usual, thus refuting the view that skin irritation as the result of exposure to air and change of temperature causes the infant to breathe. The chemical theories advanced in explanation of the initiation of the first gasp after the cord is clamped were (1) insufficient oxygen, (2) excess of carbon dioxide and (3) increased blood pressure in the brain. Barcroft [1] administered a carbon dioxide mixture to the mother and noted that it had no effect whatever on the infant. Eastman [2] studied the carbon dioxide tension of the blood in infants at birth and found that respiration began whether the tension of this gas was high or low and seemed to bear no relationship to the carbon dioxide tension. Barcroft established in the goat that lack of oxygen is the cause of the onset of respiration. According to Eastman's investigations, however, the oxygen content of the blood at birth showed no relationship between the concentration of this gas and respiration except possibly that infants with a high content of oxygen in the blood breathe more readily and that those with an extremely low content are apneic.

An entirely different approach to the problem was made possible by the unique investigations of Snyder and Rosenfeld.[3] They have established the existence of rhythmic respiratory movements of the fetus in utero long before term. Their method consisted of sectioning the spinal cord of the maternal animal at the level of the second lumbar vertebra, under local anesthesia, in order to permit laparotomy without the use of a general anesthetic. Incision of the abdomen at the lower midline was carried out beneath the surface of a bath of Ringer solution at 37 C. The gravid uterus readily escaped from the peritoneal cavity and came under direct observation. Gases and volatile anesthetics were administered through a T shaped cannula introduced by tracheotomy under local anesthesia. The authors have observed the occurrence of regular respiratory movements under these experimental conditions in full term fetuses. They have thus established that the fetal respiration is not initiated at birth and that the fetuses of the rabbit, cat and guinea pig show rhythmic respiratory movements within the uterus, instead of a state of prolonged apnea. They have further established that the regularity of fetal respiration depends on the oxygen and the carbon dioxide level of fetal blood, that the oxygen want depresses or abolishes fetal respiratory movements and that a carbon dioxide deficit results in depression or apnea of the fetus, showing that a certain level of carbon dioxide is essential for the maintenance of fetal respiration.

Snyder and Rosenfeld also made observations of the fetal movements transmitted through the abdominal wall in a series of women near term.[4] They recognized unmistakable, spontaneous fetal movements which continued at the regular rhythm for many minutes. These movements were recorded with the aid of motion pictures. They have thus given both experimental and

1. Barcroft, Joseph: Certain Changes in Circulation and Respiration Occurring at Birth, J. Physiol. U. S. S. R. **19**: 29, 1935.
2. Eastman, N. J.: Asphyxia Neonatorum, Internat. Clin. **2**: 274 (June) 1936.
3. Snyder, F. F., and Rosenfeld, Morris: Direct Observation of Intra-Uterine Respiratory Movements of the Fetus and the Role of CO_2 and Oxygen in Their Regulation, Am. J. Physiol. **119**: 153 (May) 1937.
4. Snyder, F. F., and Rosenfeld, Morris: Intra-Uterine Respiratory Movements of the Human Fetus, J. A. M. A. **108**: 1946 (June 5) 1937.

clinical confirmation of the intra-uterine respiratory activity first advanced by Schultze, Ahlfeld, Weber and Reifferscheid. In view of these facts the respiratory failure of the newborn must be regarded, according to Snyder and Rosenfeld, as an expression of a previous activity suppressed rather than failure of some new mechanism to begin functioning at birth.

The keynote to the treatment of asphyxia neonatorum, as emphasized by Eastman in his illuminating review, is gentleness. The removal of fluid and mucus from the air passages is the first step and in most instances the only one required. This may be accomplished by posture, by gentle wiping of the mouth and pharynx with the little finger covered by gauze, and by the use of suction with a catheter. The simplest, as well as the oldest, method of mouth to mouth insufflation has its obvious practical advantages as well as definite limitations and objections, the principle of which is that rupture of the pulmonary alveoli may occur unless the method is practiced gently.

Yandell Henderson warns obstetricians to be more conservative in administering narcotics shortly before delivery,[5] in view of the ample evidence that such drugs act far more on the baby than on the mother. He further emphasizes that the passage of a soft catheter into the trachea of an apneic baby is so simple an operation and insufflation by the Meltzer-Flagg technic is so effective that there is little justification for any other procedure. The technic for artificial respiration of the newborn presented by Flagg [6] insists on adherence to surgical principles, namely exposure of the field with the aid of a small laryngoscope, removal of foreign material under direct vision and, when necessary, endotracheal intubation and insufflation of oxygen and carbon dioxide under controlled pressure.

PROTRACTED MODERATE SCURVY

Szent-Györgyi,[7] who has contributed much of our accurate knowledge of the nature of vitamin C and the body's requirements for this substance, has reiterated his opinion that the quantity of vitamin C which protects the organism against scurvy may not be sufficient for optimal health and growth, because scurvy is not the first sign of vitamin C deficiency but rather a late, if not actually premortal, symptom. Man, it is said, lives under conditions in our present civilization which subject him frequently to partial vitamin deficiency. Such deficiencies may fail to produce definite characteristic symptoms but if continued for a sufficient time will bring about pathologic changes. The clinical symptoms which result from protracted or intermittent suboptimal intake of vitamin C have been too indefinite to constitute acceptable criteria for establishing the diagnosis of chronic vitamin C deficiency.

Accurate visualization of the pathologic changes in the bones and cartilage which may result from a protracted mild deficiency of vitamin C for children and for adults has been accomplished by Park, Guild, Jackson and Bond,[2] by Wolbach and Howe [3] and more recently by Ham and Elliott.[4] Various workers have expressed differences of opinion or of interpretation of the pathologic changes. Park and his associates included a thorough analysis of the roentgenologic appearance as well as microscopic changes in the scorbutic bones of children. They believe that bones continue to grow in length in scurvy because the cartilaginous epiphysial plate continues to grow. They think, however, that the cartilage is piled up unossified on the diaphysial side of the plate as a honeycomb of heavily calcified cartilage which shows readily in the roentgenograms.

Ham and Elliott used guinea pigs of both sexes fed on a diet which contained less than the basic requirement of vitamin C but a sufficient amount of this vitamin to prevent the development of the more commonly recognized results of acute scurvy. The control animals received, in addition to the basal diet, 1 cc. of orange juice per hundred grams of body weight, plus an additional 1 cc. as a margin of safety, in accordance with the recommendation of Dann and Cowgill.[8] Observations were made on five groups of animals: controls, those receiving no vitamin C, and three groups, each of which were subjected to a different degree of deficiency. Since the diaphysial lesions of severe scurvy had already been carefully studied in both man and the experimental animals by several investigators, the results in this group were not included. In the experimental animals the epiphysial plate was thinner than in the normal animals and there was not the accumulation of cartilage on the diaphysial side of the plate which had been described by Park and his associates and which, in all probability, represented a much more acute phase of this deficiency disease.

In protracted moderate scurvy, which probably approximates that most commonly seen in human beings, the experimental animals showed microscopic changes both in the diaphyses and in the epiphyses. The cancellous scaffolding of bony trabeculae in the juxta-epiphysial region of the diaphysis was poorly formed. The number and activity of the cells concerned in building this bony scaffolding was diminished. Although growth of the bones continued, they became exceedingly weak and fractures were commonly found

3. Henderson, Yandell: Resuscitation, J. A. M. A. **109**: 1561, (Nov. 6) 1937.
6. Flagg, P. J.: Asphyxia Neonatorum, Surg., Gynec. & Obst. **67**: 153 (Aug.) 1938.
7. Szent-Györgyi, Albert: Therapeutic Properties of Vitamins, Presse méd. **46**: 993 (June 22) 1938.

2. Park, Edward A.; Guild, Harriet G.; Jackson, Deborah, and Bond, Marian: The Recognition of Scurvy with Especial Reference to the Early X-Ray Changes, Arch. Dis. Child. **10**: 265 (Aug.) 1935.
3. Wolbach, S. Burt, and Howe, Percy R.: Intercellular Substances in Experimental Scorbutus, Arch. Path. & Lab. Med. **1**: 1 (Jan.) 1926.
4. Ham, A. W., and Elliott, H. C.: The Bone and Cartilage Lesions of Protracted Moderate Scurvy, Am. J. Path. **14**: 323 (May) 1938. Elliott, H. C.: Studies on Articular Cartilage: I. Growth Mechanisms, Am. J. Anat. **58**: 127 (Jan.) 1936.
5. Dann, Margaret, and Cowgill, George R.: The Vitamin C Requirement of the Guinea-Pig, J. Nutrition **9**: 507 (April) 1935.

on the diaphysial side of the epiphysial plate. The epiphysial cartilage plate was thinner than in the control animals at the point where it caps the marrow cavity, and the columns of cartilage cells were less regular. The microscopic examination of the epiphyses revealed an uncalcified zone in the region nearest the articular cartilage and a calcified zone in the layer of bone which underlies and supports the articular cartilage. The supporting bone was diminished in amount and in some places there was none to support the articular cartilage itself. Ham and Elliott are convinced that in growing scorbutic bones the portion of the shaft laid down before the onset of the disease was affected much less than the tissue laid down afterward. This would indicate that scurvy inhibits the formation of new bone more than it speeds up bone absorption.

The "jellation theory" was advanced by Aschoff and Koch,[6] who observed that zones of active normal bone formation were replaced in scurvy by a marrow framework which contained little firm intercellular substance. In 1926 Wolbach and Howe studied the bones of scurvy and stated that they believed the loose texture described by Aschoff and Koch was caused by the presence of liquid intercellular substance. This liquid intercellular substance, according to this theory, simply failed to jell because it lacked the cement material. Ham and Elliott did not agree but reported that they found no evidence of the accumulation of a jelling fluid intercellular substance. On the contrary, there seemed to be a general depression of all the activity usually concerned in bone formation.

BONE MARROW IN APLASTIC ANEMIA

The exact nature of the cellular changes in the bone marrow in aplastic anemia has received little attention despite the fact that numerous clinical studies have been made on patients with this disease. Some evidence,[1] however, suggests that the abnormality is not necessarily a lack of immature forms of erythrocytes in the bone marrow, as hyperplasia of the marrow rather than aplasia is frequently found. It might be concluded, therefore, that in this type of anemia there is a failure of the normal process of maturation of the red cell. However, the fact should be emphasized that the abnormality in maturation of erythrocytes which occurs in aplastic anemia must differ from that in pernicious anemia, as liver therapy does not favorably affect the former.

The suggestion that there is an impairment in the maturation of erythrocytes in aplastic anemia has recently been investigated further[2] on patients with this disease. Differential counts were made on biopsy specimens of sternal marrow stained both supravitally and in the ordinary way. The pathologic changes in the cellular composition of the marrow permitted classification into five distinct groups. In one the characteristic feature was a replacement of hemopoietic tissue by a cellular structure composed of megakaryocytes in various stages of development, a true "myelophthisic anemia." In the second group the marrow was sclerotic and, in the remaining three groups, differences only in the cellularity of the marrow were evident. In the latter three the marrows were either aplastic, active or hyperplastic; in each, however, the fundamental abnormality was a failure of maturation of the hemopoietic cells at an early undifferentiated stage. This observation thus supports the view that a primary etiologic factor in aplastic anemia is an impairment in the normal process of erythrocyte maturation.

Another observation of particular interest was the similarity between the appearance of the marrow from patients with aplastic anemia and that from patients with acute agranulocytosis. A similar failure in the process of cell maturation was observed. The authors therefore suggest that "aplastic anemia and acute agranulocytosis may have some etiologic factor in common." In practical support of this view, it is pointed out that anemia frequently supervenes in cases of chronic agranulocytosis, in which early death or spontaneous remissions do not occur and thus mask the more slowly developing disturbances in erythropoiesis. This significant suggestion merits continued careful investigation.

6. Aschoff, Karl Albert Ludwig, and Koch, W.: Skorbut, Jena, Gustav Fischer, 1919, pp. 56-84.

1. Sheard, Arthur: A Contribution to the Study of Pernicious Anemia and Aplastic Anemia, New York, William Wood & Co., 1924. Thompson, W. P.; Richter, N. M., and Edsall, K. S.: Analysis of So-Called Aplastic Anemia, Am. J. M. Sc. 187:77 (Jan.) 1934.

2. Rhoads, C. P., and Miller, D. K.: Histology of the Bone Marrow in Aplastic Anemia, Arch. Path. 26:648 (Sept.) 1938.

Current Comment

TYPHOID MARY DIES

The death on November 11 of Mary Mallon, aged 70, who achieved notoriety as the first typhoid carrier recognized in the United States, brings to a close a strange history. "Typhoid Mary" was a cook whose employment was almost invariably accompanied by an outbreak of typhoid. Her role in the spread of this disease was finally recognized in 1907 and she was forcibly kept out of circulation at the Detention Hospital of the Health Department for three years. Following her voluntary release in 1910 she disappeared for five more years and, although her history neither before her first detention nor after her disappearance could be learned completely, she was known to have caused at least ten outbreaks of typhoid with fifty-one cases. From 1915 until her recent demise she was held by the New York City Department of Health in the Riverside Hospital on North Brother Island. She became reasonably adapted to her changed status, and her stools were constantly used by the health department as a control for mediums used in the culture of typhoid bacilli. "Typhoid Mary" will be known forever in association with the typhoid carrier problem.[1]

1. Soper, George A.: Typhoid Mary, Mil. Surgeon 45:1 (July) 1919.

Association News

JUDGE LIMITS SCOPE OF GRAND JURY INVESTIGATION

District Court Justice Proctor on November 17 quashed two thirds of a subpena which had ordered the American Medical Association to produce to the grand jury a wide variety of certain records, some going back as far as twenty-two years. In ordering the first two paragraphs of the subpena quashed, Judge Proctor struck out that part which ordered the American Medical Association to produce certain records dealing with the following organizations: Illinois Social Hygiene League; Public Health Institute; United Medical Service; Civic Medical Center and Dr. Louis E. Schmidt, all of Chicago; Milwaukee Medical Center, Milwaukee; Trinity Hospital, Little Rock, Ark.; Ross-Loos Medical Group, Los Angeles, and Community Hospital, Elk City, Okla. The original subpena had ordered a sweeping probe of all records concerning these organizations. In his opinion, Justice Proctor is reported to have said:

> The assertions made in the motion and in arguments that compliance with the subpena will require an examination for the stated period of every paper in all the files of the Association scattered through its separate departments, occupying a large nine-story building in Chicago, have not been challenged in any way. The statement seems to be fair when one visualizes the situation in the light of the sweeping terms of the subpena. To fully and strictly comply therewith every paper of whatever nature containing the slightest reference to the ten named organizations and persons for the periods specified must be found and produced. In most cases the dates go back to 1930; in one case to 1916. In addition it would be necessary to find over a period of about four years all papers of every kind containing any possible reference to persons or bodies engaged in providing, proposing or attempting to provide prepaid medical care or low-cost group medical practice. The marks for identifying these papers are not prescribed subjects that might have some possible relevancy to the nature of the grand jury's investigation. The only means for finding them is to examine all papers for some reference, however casual or unimportant, to specify classes of persons, apparently large, who may in any way have been engaged in any movement to promote prepaid or low-cost group medical service. Moreover, it is presupposed that the Association knows the names of all those so engaged. Doubtless many are known, but it seems likely they would be met with great difficulty and uncertainty in attempting to identify all. In a few of these considerations, I cannot but regard the provisions of the first and second paragraphs of the subpena as imposing an unreasonable and oppressive burden.

The third paragraph of the subpena, which Justice Proctor allowed to stand, orders the American Medical Association to produce all correspondence, memoranda or other documents, dating from Jan. 1, 1932, relating to:

> The Justice Department's investigations of relations of the American Medical Association and the District Medical Society wit. the Group Health Association Inc. of Washington, D. C.
>
> Any requirement or proposal of the American Medical Association that hospital staff members belong to local branches of the American Medical Association.
>
> Instances where approval of hospitals for intern training by the American Medical Association were revoked because of the membership of the staffs of such hospitals.

In his opinion, as noted, Justice Proctor considered the demand of the records indicated in the first two sections of the subpena as "an unreasonable and oppressive burden."

HEARINGS BEFORE THE GRAND JURY IN WASHINGTON

The following four witnesses from the Episcopal Eye, Ear and Throat Hospital, Washington, D. C., are reported to have appeared last week before the Special Grand Jury in Washington, D. C.: Henry P. Blair, chairman of the executive committee; Miss Anita Richardson, staff secretary; Dr. Carl Henning, secretary of the board of directors, and Dr. Maurice A. Selinger, secretary of the medical board. Dr. Thomas E. Mattingly, Washington, D. C., also testified before the grand jury.

RADIO BROADCASTS

The fourth series of programs broadcast in dramatic form portraying fictitious but typical incidents of significance in relation to health by the American Medical Association and the National Broadcasting Company, entitled "Your Health," began Wednesday October 19 and will run consecutively for thirty-six weeks. The program is broadcast over the Blue network of the National Broadcasting Company each Wednesday at 2 p. m. eastern standard time (1 p. m. central standard time, 12 noon mountain time, 11 a. m. Pacific time).[1]

These programs are broadcast on what is known in radio as a sustaining basis; that is, the time is furnished gratis by the radio network and local stations and no revenue is derived from the programs. Therefore, local stations may or may not take the program, at their discretion, except those stations which are owned and operated by the National Broadcasting Company.

The next three programs to be broadcast, together with their dates and their topics, are as follows:

November 30. Rest, Relaxation and Recreation.
December 7. Tuberculosis and the Teens.
December 14. What Shall We Eat?

EXHIBIT SYMPOSIUM ON HEART DISEASE

An exhibit symposium on heart disease has been arranged for the Scientific Exhibit at the St. Louis session of the American Medical Association, May 15-19, 1939. The symposium will be presented with the cooperation of the American Heart Association, under the auspices of a committee of which Dr. Thomas M. McMillan, 2044 Locust Street, Philadelphia, is chairman. Application blanks for space in the exhibit may be obtained from Dr. McMillan or from the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ADDITIONAL MEDICAL COLLEGE NEWS AND ARTICLES APPEAR IN THE STUDENT SECTION, PAGE 2059.

ARKANSAS

Changes in Health Officers.—Dr. Ulys Jackson, Harrison, has been appointed medical director of district 14 of the state department of health, with headquarters in Marshall.—— Dr. Earnest L. Thompson, Hot Springs National Park, has been appointed in charge of the Garland County health department, succeeding the late Dr. James F. Merrit.

Society News.—The White County Medical Society was addressed September 14 in Searcy by Drs. Doyle W. Fulmer on "Malaria in Arkansas"; Barnett P. Briggs, "Respiratory Infections in Children," and Merlin J. Kilbury, "Changes in the Cervix and Uterus." All are of Little Rock.——At a meeting of the Ouachita County Medical Society in Camden September 1 the speakers were Drs. Raymond C. Cook and Kingsley W. Cosgrove, both of Little Rock, on "External Diseases of the Eye of Interest to the General Practitioner" and "The Ophthalmoscope and the General Practitioner" respectively.——Dr. Frederick H. Krock, Fort Smith, discussed "Factors in Estimation of Disability" before the Sebastian County Medical Society September 13.

CALIFORNIA

Course on Fractures.—The University of California Medical School, San Francisco, will offer a course on "Treatment of Fractures" at the San Francisco Hospital December 14-16. The course, which will be short and comprehensive, has been designed to meet the needs of physicians engaged in private practice. Additional information may be obtained from the dean's office at the university, Medical Center, San Francisco.

Society News.—Dr. Lodewyk Bendikson, Los Angeles, discussed "The Technical and Scientific Program of a Modern Research Library" before the Hollywood Academy of Medicine November 10.——The San Francisco County Medical Society devoted its meeting November 8 to a symposium on pneumonia

1. Owing to program conflicts, there will be no Chicago broadcast of the network program. Instead, a recording of the program will be broadcast over station WENR at 8 p. m. each Wednesday. This recording will be an identical rebroadcast of the network program broadcast earlier the same day.

with the following speakers: Drs. Herbert C. Moffitt, Jacob C. Geiger, John W. Brown and Edwin L. Bruck, Miss Cordula Kohl and Miss N. M. Anderson, R.N.

CONNECTICUT

Parrots Barred from Connecticut.—The importation of parrots into Connecticut is prohibited under a recent revision of the state sanitary code. The regulation also prohibits the purchase, breeding, sale or giving away of any birds belonging to the psittacine family but provides that the importation or breeding of such birds for scientific research or exhibition in public zoological gardens may be permitted subject to the approval of the state department of health.

The Terry Lectures.—Dr. Henry E. Sigerist, director of the Institute of the History of Medicine, Johns Hopkins University School of Medicine, Baltimore, delivered the Dwight Harrington Terry Foundation lectures at Yale University School of Medicine, New Haven, November 2-5. The main topic of discussion was "Medicine and Human Welfare"; individual titles of the lectures were "The Significance of Disease," "The Significance of Health" and "The Physician's Mission." The lectures are named after the late Dwight H. Terry, Plymouth, who gave $100,000 to establish the lectureship.

GEORGIA

The Jonte Equen Memorial Lecture.—Dr. Wells P. Eagleton, Newark, N. J., delivered the second Jonte Equen Memorial Lecture before the Fulton County Medical Society, Atlanta, October 21. His subject was "Allergic and Toxemic Types of Curable Bacterial Meningitis." The lectureship was established a year ago by Dr. Murdock Equen in memory of his father.

District Meeting.—The Second District Medical Society was addressed in Bainbridge October 14, among others, by Drs. John W. Mobley Jr., Pelham, on "Hookworm—Its Economic and Medical Importance in Southwest Georgia"; Thomas C. Davison, Atlanta, "Thyroids," and Walter P. Rhyne, Albany, "Relationship of Nasal Infection and Sinusitis with Infection of the Middle Ear."

Society News.—Dr. Grayson L. Carroll, St. Louis, addressed the Georgia Urological Association in Atlanta October 13 on "The Trend Toward Conservatism in Urological Treatment."——The Fulton County Medical Society was addressed October 20 by Drs. Benjamin Russell Burke and William B. Armstrong on "The Normal and Pathologic Larynx" and by Drs. Earle H. Floyd and James L. Pittman on "The Recuperative Powers of the Kidney."

ILLINOIS

Conference of Health Officers and Public Health Nurses.—The annual conference of Illinois Health Officers and Public Health Nurses will be held in the auditorium of the Centennial Building, Springfield, November 30-December 1, with Dr. Albert C. Baxter, acting state health director, as chairman. Out of state speakers will include:

Dr. Wilson G. Smillie, New York, The Development of Public Health in the United States.
Dr. Harry S. Mustard, New York, Rural Health Problems.
Dr. Bruce Douglas, Detroit, Newer Aspects of the Tuberculosis Problem.
Dr. Adolph S. Rumreich, U. S. Public Health Service, Washington, D. C., Administrative Control of Pneumonia.
Dr. Nels A. Nelson, Boston, Administrative Control of Syphilis and Gonorrhea.
Dr. Gaylord W. Anderson, Minneapolis, Scarlet Fever Control.
Dr. Arthur T. McCormack, Louisville, Ky., Outlook in Public Health.
Dr. Franklin G. Ebaugh, Denver, Mental Hygiene in Public Health.
Sophie Nelson, R.N., Boston, Organizing Community Nursing Service.
John C. Brauer, D.D.S., Des Moines, Dental Hygiene in Public Health.

Chicago

Annual Institute Meeting.—Dr. Joseph A. Capps will deliver the presidential address at the twenty-third annual meeting and dinner of the Institute of Medicine of Chicago December 6; his subject will be "Prognosis of Subacute Bacterial Endocarditis."

INDIANA

Changes in Health Officers.—Dr. William D. Hart has been appointed director of district health unit 4, Rising Sun, succeeding Dr. George M. Brother, who is taking a year's study at Johns Hopkins University School of Hygiene and Public Health, Baltimore. Dr. Lewis C. Robbins is acting chief of the bureau of local health administration, state board of health, Indianapolis, while Dr. John W. Ferree, chief of the bureau, completes a course at the school of hygiene and public health.——Dr. John S. Woolery, Bedford, has been appointed health officer of Lawrence County, filling the unexpired term of the late Dr. Wesley H. McKnight.

Society News.—The Fayette-Franklin County Medical Society was addressed in Connersville October 11 by Dr. Don E. Kelly, Indianapolis, on "Treatment of Common Skin Diseases."——The Parke-Vermillion County Medical Society heard Dr. Caryle B. Bohner, Indianapolis, discuss "Diagnosis and Treatment of Allergic Diseases" October 19.——Dr. Florian E. Schmidt, Chicago, addressed the Montgomery County Medical Society in Crawfordsville October 20 on "Serum Treatment of Pneumonia."——At a meeting of the St. Joseph County Medical Society in South Bend October 18 the speakers were Drs. Fred P. Eastman and Edward L. Rigley, South Bend, on "History of Early Medicine in St. Joseph County" and "Intrinsic Lesions of the Esophagus."——Dr. John E. Dalton, Indianapolis, discussed "Syphilis and the Pregnant Woman" before the Randolph County Medical Society in Winchester October 10.——The Floyd County Medical Society was addressed in New Albany October 14 by Dr. James W. Baxter Jr., New Albany, on "Sulfanilamide and Estrogenic Substance."

KANSAS

Health Talks for School Children.—The speakers' bureau of the Sedgwick County Medical Society began a series of lectures October 27 to continue for sixteen weeks designed for school boys on topics of general health interest. The list of subjects coincides with the topics to be broadcast for a given week on the American Medical Association's radio program "Your Health." The talks are twenty minutes in length followed by twenty minutes of discussion and will be given in the auditorium of the North and East high schools, Wichita, Mondays and Thursdays respectively.

Society News.—Dr. Fred J. McEwen, Wichita, addressed the Mitchell County Medical Society at Beloit October 12 on the electrocardiograph.——At a meeting of the Wichita League for the Hard of Hearing October 12 Drs. Lloyd Gilbert Little spoke on "The Psychiatric Aspect of the Hard of Hearing" and Ernest E. Tippin, "Conservation of Hearing."——The Johnson County Medical Society was addressed in Olathe October 10 by Drs. Wayne C. Bartlett and James S. Hibbard Jr. on "Surgical Gallbladder" and "Surgical Treatment of Ulcerous Lesions of the Stomach" respectively.——At a meeting of the Pratt County Medical Society October 28 Drs. Christian A. Hellwig spoke on "Uterine Bleeding After the Age of Forty" and Howard C. Clark, "Prenatal Care." Both are from Wichita.——The Wyandotte County Medical Society was addressed October 18 by Drs. Ingall H. Neas, Kansas City, on "Pneumothorax Therapy" and Leland F. Glaser, Kansas City, "Clinical Results Obtained by Artificial Fever Therapy."

MICHIGAN

New Unit at State Hospital.—Construction has started on the second unit of the $1,039,196 state hospital building program in Pontiac to provide accommodations for 700 additional patients. The new building will be located between the present administration building and the neuropsychiatric hospital, now under construction, and will house a general hospital unit. The neuropsychiatric unit will cost $698,547. Financed partially by PWA funds, the building program at Pontiac is part of the $11,000,000 state hospital building project.

Guest Speakers in Wayne County.—Dr. Daniel C. Darrow, associate professor of pediatrics, Yale University School of Medicine, New Haven, Conn., addressed a joint meeting of the Wayne County Medical Society and the Detroit Physiological Society in Detroit November 7 on "Salt Deficit—The Essential Feature of Clinical Dehydration." Dr. Martin E. Rehfuss, Philadelphia, addressed the medical section of the county medical society November 14 on "Gallbladder Infections" and Dr. Olga S. Hansen, Minneapolis, will speak before the surgical section November 28 on "Cardiac Problems in Pregnancy."——Dr. Eric M. Matsner, New York, gave an illustrated lecture November 1 before the Detroit Obstetrical and Gynecological Society; his subject was "Trends in Contraceptive Practice."

MINNESOTA

Protest Appointment of Physicians for City Employees.—Over the protest of the Ramsey County Medical Society and the union of city and county employees, the city council of St. Paul appointed five physicians and surgeons to care for all city employees injured in line of duty. The medical society and the union contended that the plan infringed the right of

employees to choose their own physicians. Following the appointments the Ramsey County society adopted a resolution urging members to decline such appointments. In addition, the St. Paul Trades and Labor Assembly disapproved the plan and demanded that the Labor members of the council ask for a reconsideration. The medical society in its resolution pointed out that the state supreme court has held that an employee should have the unquestioned right to choose his medical attendant. In the same opinion it was held that the fact that the employer is a municipality and employs a physician cannot alter the construction of the statute. It was reported that three of the physicians appointed had refused to serve.

MISSOURI

District Meeting.—The Eighth Councilor Medical Society was addressed in Joplin October 20 by Drs. James G. Carr, Chicago, on the syphilitic heart and Francis T. H'Doubler, Springfield, report of the International Goiter Conference in 1938. A symposium on treatment of accidental injuries was presented by Drs. Charles T. Reid, Joplin, on "The Eye and Highway Accidents"; Frank D. Dickson, Kansas City, "Roadside Emergency Care and Highlights on the First Dressing," and Donald F. Coburn, Kansas City, head injuries.

MONTANA

Personal.—Dr. Leo F. Hall, formerly of Berea, Ohio, has been appointed health officer for Helena, and Lewis and Clark counties.

Society News.—Dr. Enoch M. Porter, Great Falls, has been elected president of the Montana Public Health Association and Dr. William F. Cogswell, Helena, reelected secretary for the twenty-fifth successive year, according to the *Journal-Lancet*.

NEW YORK

Society News.—Dr. David M. Davis, Philadelphia, addressed the Rochester Academy of Medicine November 3 on "Prevention and Treatment of Serious Infections of the Kidney."——Drs. Rufus B. Crain and Morris E. Missal addressed the Rochester Pathological Society November 17 on "The Employee with Heart Disease—His Management in Industry."

Farmer Convicted for Storing Marihuana.—A farmer in Columbia County was fined $400 and received a sentence to six months' imprisonment or, in lieu of the fine, another six months' imprisonment, for harvesting and storing marihuana. Bundles of the weed valued at $1,500 were found in an attic. The case was settled by county and local police authorities under a special provision of the criminal code providing jurisdiction over misdemeanors applying to narcotic drugs.

Graduate Courses in Syracuse.—The medical education committee of the Onondaga County Medical Society is sponsoring the following graduate courses of several sessions each:

Diagnosis of Common Eye Diseases, Dr. Searle B. Marlow.
Diagnosis and Treatment of the Commoner Types of Skin Diseases, Dr. Leon H. Griggs.
Signs and Symptoms of Gastro-Intestinal Disorders, Dr. I. Harris Levy.
Psychiatry in General Practice and the Specialties, Dr. Noble R. Chambers.
Minor Surgery in General Practice, Dr. Edgar M. Neptune.
Examination of the Central Nervous System, Dr. Wardner D. Ayer.
Gynecologic Examinations in General Practice, Dr. Nathan P. Sears.

New York City

Typhoid Mary Is Dead.—Mary Mallon, for many years known as "Typhoid Mary" because she was the first typhoid carrier identified in the United States and blamed for many cases before she was forced to live in isolation, died November 11 at Riverside Hospital. "Typhoid Mary" came to the attention of health authorities in 1904, when an epidemic of typhoid spread through Oyster Bay and adjacent towns. The disease was traced to a household where Mary had been a cook. She disappeared and was not discovered until 1907, when she was again found to be cooking in a Park Avenue home. After being proven to be a carrier she was committed to the hospital on North Brother Island to live. After three years the health department released her on her promise not to accept work in which food handling was involved. Four years later an epidemic occurred in a New Jersey sanatorium; Mary had been a cook there. Shortly afterward there was an outbreak at the Sloane Maternity Hospital with two deaths. She was sent then to the island permanently. She was about 70 years of age at her death.

Science Writers Receive Award.—The Clement Cleveland Medal of the New York City Cancer Committee was awarded at the annual dinner November 1 to the National Association of Science Writers "for outstanding work in the campaign to control cancer." Mr. William L. Laurence, science writer for the New York *Times*, received the medal for the association. The presentation was made by Mrs. Robert G. Mead, daughter of Dr. Cleveland, for whom the medal is named. Mrs. Mead is chairman of the cancer committee's finance committee. This was the second award of the medal, the first having gone to Henry R. Luce, publisher of *Time*, Inc., for the March of Time film on cancer. Dr. John C. A. Gerster, chairman of the cancer committee, presided at the dinner and presented to Mrs. Mead a book containing personal greetings from 225 friends and associates in recognition of her twenty-five years in cancer work. Dr. Francis Carter Wood presented a preview of the cancer exhibit which is to be shown at the New York world's fair in 1939. The exhibit will be on view at the Museum of Science and Industry until January.

Society News.—At a meeting of the New York Roentgen Society October 17 the speakers were Drs. Maurice N. Richter on "Experimental and Pathologic Aspects of Leukemia, Lymphosarcoma and Hodgkin's Disease"; Arthur P. Stout, "Indication for Surgery"; Albert Kean and Nathan Rosenthal, "Roentgenotherapy in Leukemia," and Maurice Lenz, "Roentgenotherapy of Lymphosarcoma and Hodgkin's Disease."——At a meeting of the Medical Society of the County of Kings October 18 the speakers were Drs. Nathan B. Van Etten on "The Doctor Sits at the Crossroads"; Robert B. Osgood, Boston, "An Interpretation of the Principles and Proposals of the Informal Committee of Physicians (The Committee of 430)," and Irvin Abell, Louisville, Ky., President of the American Medical Association, "The Attitude of the American Medical Association Toward the Proposals of the National Health Conference."——Drs. James Alexander Miller and Adrian V. S. Lambert addressed the Brooklyn Thoracic Society October 21 on "Pathogenesis and Management of Pulmonary Tuberculosis" and "Surgical Treatment of Pulmonary Tuberculosis" respectively.——Dr. Harold E. B. Pardee addressed the Medical Society of the County of Queens October 21 on "Heart Disease and Pregnancy."

OHIO

New Health Commissioner in Cincinnati.—Dr. Carl A. Wilzbach, executive secretary of the Cincinnati Social Hygiene Society, was appointed health commissioner of Cincinnati November 4 to take office not later than December 1. The city has not had an official commissioner since the death of Dr. William H. Peters in 1936, according to newspaper accounts. Dr. Owen C. Fisk was made acting commissioner after the death of Dr. Peters and later resigned because of ill health. Dr. Frank K. Harder succeeded Dr. Fisk as acting commissioner and will now become assistant commissioner. Dr. Wilzbach graduated from the University of Cincinnati College of Medicine in 1922.

Advisory Council for Research Foundation.—Announcement is made of the appointment of a scientific advisory council for the Children's Hospital Research Foundation, Cincinnati. The council consists of Drs. Oswald T. Avery of the Rockefeller Institute for Medical Research, New York; Ernest W. Goodpasture, professor of pathology, Vanderbilt University School of Medicine, Nashville, Tenn.; Albert Baird Hastings, Ph.D., professor of biological chemistry, Harvard University Medical School, Boston, and Alfred N. Richards, Ph.D., professor of pharmacology, University of Pennsylvania School of Medicine, Philadelphia. The Children's Hospital Research Foundation was established in 1929 with funds given by Mr. William Cooper Procter. The hospital and the foundation are affiliated with the University of Cincinnati College of Medicine, Dr. Albert Graeme Mitchell, professor of pediatrics, being director of the medical service at the hospital and of the foundation. Glenn E. Cullen, Ph.D., is director of laboratories. About 150 publications have appeared from the foundation staff.

Society News.—The industrial and orthopedic section of the Cleveland Academy of Medicine, the Bunts Institute and the Cleveland fracture committee of the American College of Surgeons sponsored a special meeting on fractures November 16. A clinic was held in the afternoon at St. Luke's Hospital, and Dr. John Albert Key, St. Louis, delivered the Bunts Lecture at the Cleveland Clinic in the evening on "Cervical and Trochanteric Fractures of the Femur."——Dr. Clyde E. Shinkle, Cincinnati, among others, addressed the Adams County Medical Society, Winchester, October 19 on infantile paralysis.——Dr. Parke G. Smith, Cincinnati, addressed the Clinton

County Medical Society, Wilmington, October 4 on "The Importance of Abnormal Renal Mobility."——Drs. Robert F. Thaw, Akron, and William M. Skipp, Youngstown, addressed the Portage County Medical Society, Atwater, October 6 on "Treatment of Diseases of the Ear, Nose and Throat" and "Problems Confronting the Medical Profession" respectively. ——Bradley M. Patten, Ph.D., Ann Arbor, Mich., addressed the Mahoning County Medical Society, Youngstown, October 18 on "The First Heart Beats and the Beginning of the Circulation Studied Microcinematographically in Living Embryos." ——Dr. Wiley D. Hickey, Leipsic, was elected president of the Northwestern Ohio Medical Association at its annual meeting in Defiance in October. Dr. Daniel B. Spitler, Hoytville, was made vice president and Dr. Frederic G. Maurer, Lima, secretary.

PENNSYLVANIA

Society News.—Drs. William D. Stroud and Hugh Montgomery, Philadelphia, addressed the Northampton County Medical Society at the Country Club of Northampton County October 20 on "A Seven Years Study of the Clinical Efficacy of Various Digitalis Preparations" and "Treatment of Peripheral Vascular Disease" respectively.——Drs. John P. Griffith, Pittsburgh, and Walter M. Bortz, Greensburg, addressed the Westmoreland County Medical Society, Greensburg, October 18 on "Intestinal Obstruction" and "Hypertension" respectively. —— Dr. William W. Bolton, Upper Darby, addressed the Medical Society of Lycoming County October 14 on "Syphilis Program of the Pennsylvania Department of Health." —— Dr. Charles F. Geschickter, Baltimore, addressed the Cambria County Medical Society, Johnstown, October 7, on "Mammary Tumors."

Philadelphia

Personal.—Florence B. Seibert, Ph.D., of the Henry Phipps Institute, University of Pennsylvania, received the honorary degree of doctor of laws from Goucher College, Baltimore, October 14, when the college celebrated its fiftieth anniversary.

Ex-Residents' Annual Dinner.—The fifty-second annual dinner of the Association of Ex-Resident Physicians of the Philadelphia General Hospital will be held December 6 at the Bellevue-Stratford. Dr. Randle C. Rosenberger, professor of preventive medicine and bacteriology, Jefferson Medical College, will be the guest of honor. Dr. Rosenberger was assistant pathologist at the Philadelphia General Hospital in 1898, when it was known as Blockley Hospital, and was director of the laboratory from 1903 to 1919. Dr. John J. Dailey, McAdoo, Pa., president of the association, will preside at the dinner. Ex-residents who do not receive notices of the dinner are requested to send their correct addresses to the secretary, Dr. George Wilson, 133 South Thirty-Sixth Street, Philadelphia.

Society News.—Drs. Norman R. Ingraham and John A. Kolmer addressed the Obstetrical Society of Philadelphia November 3 on "Treatment Reactions Among Syphilitic Pregnant Women with a Report of Seven Maternal Deaths from Syphilis Therapy" and "Syphilis in Relation to Gynecology and Obstetrics with Special Reference to Diagnosis and Treatment" respectively. —— Dr. George P. Robb, New York, addressed the Philadelphia Roentgen Ray Society November 3 on "Visualization of the Cardiac Chambers, the Pulmonary Circulation and the Great Blood Vessels in Man."——Drs. Albert E. Bothe and Jonathan E. Rhoads addressed the Philadelphia Academy of Surgery November 7 on "Treatment of Kidney Tumors" and "Control of Hemorrhage in the Jaundiced Patient" respectively.

TEXAS

District Meeting.—The Thirteenth (Northwest Texas) District Medical Society held a meeting September 13 at Breckenridge. The speakers included Drs. John Edward Johnson, Mineral Wells, "Gastric Failure in Middle Life"; William L. Marr, Galveston, "Treatment of the Anemias"; Truman G. Blocker Jr., Galveston, "Management of the Acute Traumatized Abdomen," and Herman P. Radtke, Fort Worth, "Fracture of the Neck of the Femur Treated by Internal Fixation."

VIRGINIA

Society News.—Dr. Thomas S. Cullen, Baltimore, addressed the Norfolk County Medical Society, Norfolk, October 17 on sewage disposal and stream pollution. —— Dr. Robert Finley Gayle Jr., Richmond, was the guest speaker at a recent meeting of the Medical Association of the Valley of Virginia in Staunton on "Treatment of the Psychoneurotic Individual."

Lectures at the Richmond Academy.—A series of lectures on the blood has been arranged by the committee on medical education of the Richmond Academy of Medicine. The series is as follows:

Harvey E. Jordan, Ph.D., Charlottesville, Embryology of the Blood, October 18.
Rolland J. Main, Ph.D., Richmond, Physiology of the Blood, November 1 and 15.
Dr. David T. Smith, Durham, N. C., Immunological Reactions of the Blood.
Dr. John H. Scherer, Richmond, Cellular Reactions Occurring in the Blood During Infections.
Dr. Frank L. Apperly, Richmond, The Pathologic Physiology of Anemia.
Dr. Maxwell M. Wintrobe, Baltimore, The Choice of Methods for the Correction of the Anemias and Why.

WASHINGTON

Society News.—Dr. Herbert F. Traut, New York, addressed the Walla Walla Valley Medical Society, Walla Walla, November 14, on "The Present Status of Endocrinology Related to Gynecological Problems." Dr. Ralph H. Highmiller of the state department of labor and industry presented new changes in the accident fee schedule recently developed with the cooperation of the Washington State Medical Association.——Dr. Arthur M. Shipley, Baltimore, addressed the Spokane County Medical Society, Spokane, November 17 on "Surgical Conditions Involving the Diaphragm." Dr. Herbert F. Traut, New York, addressed a special meeting November 11 on "The Upper Urinary Tract in Pregnancy."

WEST VIRGINIA

Committee on Low Cost Medical Care.—At a special meeting of the council of the West Virginia State Medical Association in Charleston October 2 a committee was appointed to formulate policies concerning prepayment or postpayment medical service plans or bureaus. Drs. Charles W. Waddell, Fairmont, president, and Ray M. Bobbitt, Huntington, president-elect of the state association, appointed the following committee: Drs. Robert J. Wilkinson, Huntington, chairman; John W. Moore, Charleston; Robert J. Reed Jr., Wheeling; Richard O. Rogers, Bluefield; Richard V. Shanklin, Gary, and Philip Johnson, Fairmont.

GENERAL

Urological Meeting. — The Southeastern Branch of the American Urological Association will meet in Louisville, Ky., December 2-3. Among the speakers will be Drs. Herman L. Kretschmer, Chicago, on "Elusive Ulcer of the Bladder: A Critical Review of 110 Cases"; Joseph F. McCarthy, New York, "Prostatic Resection"; Charles C. Higgins, Cleveland, "Stone in the Urinary Tract," and Roger C. Graves, Boston, "Respiration Pyelography."

Annual Meeting on Prevention of Blindness. — The annual meeting of the National Society for the Prevention of Blindness will be held in New York December 1. Mr. Lewis H. Carris, managing director of the society, will give an address entitled "Thirty Years in Saving Sight" and the Leslie Dana Gold Medal will be presented to Dr. Ellice M. Alger, New York, who will speak on "Prevention of Blindness from the Ophthalmologist's Point of View."

Propose Reunion of Workers on Brazilian Railroad.—The Madeira-Mamore Association, composed of persons who worked on the construction of the Madeira-Mamore Railroad in central and western Brazil from 1907 to 1913, has proposed a reunion of all these workers during the world's fairs in 1939 in San Francisco and New York. Physicians and nurses who are not now members and who care to make themselves known can obtain information from John Y. Bayliss, Richmond, Va., president of the association; Edgar A. Smith, Newportville, Pa., secretary; John H. Armitage, 1205 Russell Road, Alexandria, Va.; Frank S. Jonas, 277 Broadway, New York, chairman of the New York committee, or Charles L. Dimmitt, Redwood City, Calif., chairman of the San Francisco committee.

Society News.—The first annual session of the American Medico-Legal Association will be held at the Drake Hotel, Chicago, May 12-13, 1939. Dr. Michel Pijoan, 137 Newbury Street, Boston, is the secretary of the association.——The Pan-Pacific Surgical Association will hold its third congress since its establishment in 1929 in Honolulu Sept. 15-28, 1939. Dr. Forrest J. Pinkerton, Young Building, Honolulu, Hawaii, is the secretary. —— The Annual Midwinter Conference of Eastern Radiologists will be held February 10-11, 1939, in Washington, D. C., with headquarters at the Hotel Mayflower. For information, write the secretary of the local committee, Dr. Joseph F. Elward, 1726 Eye Street N.W., Washington.

Fellowships Available for Research in Chemistry.—Grants to the total amount of $25,000 are available through the Lalor Foundation for research in any field of chemistry, according to an announcement. For a reasonable proportion of the awards, preference will be given to candidates "shaping their careers or carrying on research to accomplish a more effective application of the principles and discoveries of physical and organic chemistry upon problems of biochemistry, chemotherapy and pharmacology." The amount of each award will be determined on the basis of previous training, ranging usually between $1,800 and $2,500. Attainment of the Ph.D. degree or its equivalent in training is a requirement, but there are no other limitations as to age or residence. Inquiries and requests for application forms should be addressed to C. Lalor Burdick, secretary, Lalor Foundation, Wilmington, Del. The Lalor Feundation was established in 1935 for support of scientific research and has administered twelve fellowships. Applications must be filed by December 31.

Tri-State Meeting.—At the thirty-third annual meeting of the Tri-State Medical Society at the Grim Hotel, Texarkana, October 26-27 Dr. Joseph D. Roberts Jr., Longview, Texas, was elected president. The following were made vice presidents: Drs. Stanley George Wolfe, Shreveport, La.; Arley D. Cathey, El Dorado, Ark., and Richard G. Granbery, Marshall, Texas. Dr. Robert K. Womack, Longview, was elected secretary. The scientific program included:

Dr. Walter G. Reddick, Dallas, Sulfanilamide in General Medicine.
Dr. Stanley George Wolfe, Shreveport, La., Undulant Fever.
Dr. Robert Lee Sanders, Memphis, Tenn., Surgical Treatment of Gallbladder Disease.
Dr. Henry Gordon Rudner, Memphis, Synopsis of Medical Treatment of Gallbladder Disease.
Dr. J. L. McGehee, Memphis, Preoperative and Postoperative Care of Abdominal Surgical Conditions.
Dr. Oscar W. Bethea, New Orleans, A Study of the Status of New Drugs.
Dr. Edward L. King, New Orleans, Diagnosis and Treatment of Cervical Dystocia.
Dr. Lewis J. Moorman, Oklahoma City, Difficult Problems in Diagnosing Chest Conditions.
Dr. Lee B. Harrison, St. Louis, Cardiovascular Syphilis.

Western Surgical Association.—The forty-eighth annual meeting of the Western Surgical Association will be held in Omaha December 2-3 with headquarters at the Hotel Fontenelle. The guest speaker will be Dr. William Boyd, Toronto, Canada, on "Tumors of the Neck." Among other speakers will be:

Drs. Waltman Walters and Albert M. Snell, Rochester, Minn., Hemorrhagic Tendency in Jaundice, with Special Reference to Its Treatment with Vitamin K.
Dr. Neil J. MacLean, Winnipeg, Man., An Improved Incision for the Radical Operation for Carcinoma of the Breast.
Dr. George B. Packard, Denver, Indications for Splenectomy in Children.
Dr. Henry W. Meyerding, Rochester, Minn., Diagnosis and Treatment of Ewing's Tumor.
Dr. Stanley J. Seeger, Milwaukee, Technical Notes on Pediatric Surgery—(1) Hypertrophic Pyloric Stenosis and (2) Congenital Indirect Inguinal Hernia.
Drs. George M. Curtis and Frank E. Hamilton, Columbus, Ohio, The Surgical Significance of the Motor Activity of the Human Stomach.
Dr. Owen H. Wangensteen, Minneapolis, Experiences with Employment of Suction in the Treatment of Acute Intestinal Obstruction.
Dr. William T. Coughlin, St. Louis, The Repair of Pharyngeal and Laryngotracheal Fistulae.

Dr. Casper F. Hegner, Denver, is president of the association.

Special Society Elections.—Dr. R. Wallace Billington, Nashville, Tenn., was elected president of the Clinical Orthopedic Society at its annual meeting in Nashville and Birmingham, Ala., October 7-8. Dr. Dale Wilson, Toledo, Ohio, was made vice president and Dr. H. Earle Conwell, Birmingham, secretary. Next year's meeting will be held in Little Rock, Ark., and Oklahoma City in October.——Dr. John C. McKinley, Minneapolis, was elected president of the Central Neuropsychiatric Association at its annual meeting in Minneapolis October 7-8; Dr. Groves B. Smith, Godfrey, Ill., was made vice president and Dr. William C. Menninger, Topeka, Kan., secretary.——Dr. Herbert B. Wright, Cleveland, was made president-elect of the Aero Medical Association at the recent annual meeting in Dayton, Ohio, and Dr. James C. Cole, New Orleans, was installed as president. Vice presidents at large elected were Capt. Harry G. Armstrong, Wright Field, Dayton; Drs. Richard H. Hoffman, Bellefonte, Pa.; Eldridge S. Adams, Washington, D. C., and Giles A. Coors, Memphis. Dr. Herbert F. Fenwick, Chicago, was elected first vice president and Dr. David S. Brachman, Detroit, reelected secretary. ——At the thirty-ninth annual session of the Seaboard Airline Railway Surgeons Association in Richmond October 13-15 the following officers were elected: Drs. Arthur R. Beyer, Tampa, Fla., president; Joseph O. McClelland, Maxton, N. C., Robert O. Lyell, Miami, Fla., and Wilbur R. Bracey, Richmond, vice presidents, and Jarrett W. Palmer, Alley, Ga., secretary.

CANADA

Professor Marrian Goes to Edinburgh.—Guy F. Marrian, D.Sc., professor of biochemistry, University of Toronto Faculty of Medicine, Toronto, has been appointed to the chair of chemistry in relation to medicine at the University of Edinburgh. Professor Marrian was born in London in 1904 and educated at University College, London. After obtaining his doctor's degree in 1930 he was lecturer in the department of physiology and biochemistry at University College until 1933, when he received a William Julius Mickle fellowship from the University of London and went to Toronto as assistant professor of biochemistry. He was made a full professor in 1936.

Society News.—Dr. Frank A. Turnbull addressed the Vancouver Medical Association, Vancouver, October 4 on "Pituitary and Parapituitary Tumors." —— Sir Edward Mellanby, secretary general of the Medical Research Council of Great Britain, gave an address at the University of Toronto October 5 under the auspices of the Canadian Medical Association. His subject was "Nutrition—Its Importance to the Individual and the Nation."——Dr. John Alexander, Ann Arbor, Mich., addressed the Academy of Medicine of Toronto November 1 in a joint meeting with district 11 of the Ontario Medical Association on "Management of Abscess of the Lung."

Deaths in Other Countries

Sir Robert J. Johnstone, Newcastle, president of the British Medical Association in 1937, died October 26.—— **Dr. David Bruce Stewart Bruce-Jones,** senior medical officer of the Canadian Pacific Steamship Line, died in London November 1.

Government Services

Training in Pathology and Diagnosis of Tumors

The surgeon general of the U. S. Public Health Service announces that, in order to meet the need for pathologists skilled in the diagnosis of tumors, special consideration will be given in making appointments for training under the provisions of the National Cancer Institute Act to qualified pathologists who wish to obtain additional training in diagnosis and pathology of tumors.

Monthly Meeting of Navy Officers

Dr. Esmond R. Long, director of the Henry Phipps Institute of the University of Pennsylvania, Philadelphia, addressed the first monthly meeting of this season of the medical and dental officers of the navy at the Naval Medical School, Washington, D. C., October 10, on "The Use of Tuberculin in the Diagnosis of Tuberculosis."

Residencies Open at St. Elizabeths Hospital

The U. S. Civil Service Commission announces open competitive examinations for internships and residencies at St. Elizabeths Hospital, Washington, D. C. It is expected that there will be two vacancies July 1, 1939, and two Oct. 1, 1939, for junior medical officers in rotating internships of two years; during the fiscal year beginning July 1, 1939, there will be five vacancies for psychiatric residents, graduate internships offered to graduates in medicine who have served an accredited internship. Applicants should state definitely whether they are applying for the rotating internship or the psychiatric residency. Entrance salaries are $2,000 a year; if permissive legislation already proposed is passed by Congress, however, the salary of interns may be $600 a year. All interns are required to live in the hospital and there are no quarters for the families of married interns. Applicants for the internships must be fourth year students in a grade A medical school and those for the residencies must have graduated from a grade A school and must have completed an internship of at least one year. Candidates must not have passed their fortieth birthday on the date of the close of receipt of applications. They will not be required to report at any place for examination but will be rated on the extent of their education and on the extent and quality of their experience. The closing date is December 13 for all except eleven states in the Far West, from which applications will be received until December 16. Forms may be secured from the Secretary, Board of Civil Service Examiners, at any first class post office, from the commission at Washington, D. C., or from any district office of the commission.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 29, 1938.

Gas Masks for Babies and Young Children

Nearly two million gas masks for babies and young children are in course of construction. The problem of providing protection for them from gas attacks has proved difficult. They are being made in two sizes, one for children under the age of 2 years, the other for those between the ages of 2 and 4 years. Those for the older children are similar to adult civilian masks, but the uncomfortable straps are replaced by a neat rubber headpiece. Delay has been caused by the many experiments necessary before a suitable filter could be found through which children could breathe with ease. The masks for babies of 2 and under are an entirely British invention and have been designed differently from the ordinary mask. They fit over the baby's body and are secured between the legs.

The Danger of Naval Hospitals at Naval Centers

A correspondent of the *Times* points out that the chief naval hospitals are situated in important naval centers and that they might be seriously damaged in the event of bombardment or air attack. He therefore suggests that, in view of the difficulties of evacuating casualties by road or rail, hospitals should be placed in positions on the coast distant from any naval or military objectives, so that the transport of casualties might easily be effected by means of the small pleasure steamers at present to be found in holiday resorts. Such hospitals could be used as youth hostels in time of peace and readily converted to their purpose should hostilities begin.

Evacuation of Populous Areas in War

It is unfortunately true that war now means attacks on the civilian population of towns and cities. The government appointed a committee to consider the question of evacuation of populous areas in war and has accepted its report. The committee says that the whole issue in any future war may well turn on the manner in which evacuation from densely populated industrial areas is handled. People will be much safer in rural districts or in small country towns than in the heart of London. A thinning of the population of urban areas will relieve the pressure on essential services which might prove insufficient. In the event of an exodus, whether planned or forced by repeated air attacks, men and women engaged on essential work would in the great majority of cases be moved by a sense of duty to continue their tasks. The tendency to migrate would be especially among those who can be spared. The country will not be fully prepared until schemes of evacuation have been worked out for the main industrial centers and the necessary organization has been set up. The schemes must be on a basis of voluntary evacuation. Compulsory evacuation would arise only in limited areas subject to intensive bombardment or because of flooding or other reason they had become uninhabitable.

In the London area there appear to be adequate transport facilities for evacuation on any practicable scale. The main line railways would be fed by underground railways and busses. It is calculated that persons could be removed from London at a rate of 100,000 an hour. The refugees would have to be housed in private dwellings under a scheme of compulsory billeting. The Ministry of Health has assumed, as a rough basis for calculation, that five persons could be accommodated in every four rooms. A scheme of voluntary billeting is considered impracticable, but in the case of school children it would be an advantage if they were received as far as possible in houses that had expressed willingness to receive them. No serious difficulty is anticipated in feeding refugees provided arrangements are made in advance. Welfare services will be required and will offer a great scope for voluntary work. Children should be transferred school by school and have the first claim on transport. The public should be educated in any scheme decided on.

The Destruction of Mosquitoes Carried by Airplanes

The possibility of airplanes introducing diseases into a country by carrying insect vectors from a place where it is rife must be provided against. Indeed, it has been stated that a new type of malaria was brought from Africa to Brazil in this way. There is now anxiety whether yellow fever, which has heretofore been confined to tropical America and Africa, will be transplanted to Asia. Imperial Airways maintains a research station in London, and experiments have been made there with a practically odorless and colorless vapor which is distilled from an English wild flower, pyrethrum, specially cultivated for the purpose. About 200 mosquitoes, all potential vectors of disease, were supplied by the London School of Tropical Medicine. The liquid distillate from the pyrethrum was poured into an atomizer constructed for use in aircraft, which was used in a room of about twice the capacity of the imperial flying boats. In seven minutes, about half the time during which the atomizer would be used on aircraft, all the insects were dead. The vapor is harmless to man but it will also kill the tsetse fly, the vector of trypanosomiasis. All countries through which Imperial Airways operates have regulations for preventing the carriage of disease by insects, but their regulations differ. It is hoped that international recognition of the method will be obtained.

The Need for a New Unity in Medicine

Opening the new medical school of the University of Aberdeen, Lord Dawson said that curative and preventive medicine were separated too much. At present preventive medicine was inadequately taught and was nothing but a postscript to the student's career. In recent years there had been a gradual growth of medical services and hospitals which, however individually excellent, were a medley of separate efforts. They fell under three headings: (1) communal services and clinics, (2) voluntary hospitals and (3) municipal hospitals. The communal services represented a fine achievement but had the serious defect of isolation and divorce from the general body of physicians in their district. The voluntary hospitals were centuries old and had grown up with the British people. To allow them to become absorbed by the local authorities into their municipal hospitals would be alien to our social evolution and a damage to our well being. But they could not stand as disconnected institutions and must play their part in a comprehensive scheme of medical services. They could not claim that the possession of teaching schools conferred the right to exclusiveness, for teaching had been extended to the communal clinics and municipal hospitals. The latter had come into existence during the last eight years and had steadily grown in numbers and importance. They were serving the community well but they should cooperate with the voluntary hospitals. Two sets of hospitals and two sets of doctors working independently would produce only confusion and conflict.

A "Trial Year" for Student Nurses

As stated in previous letters, the hospitals have difficulty in obtaining a sufficient number of nurses. The arduousness and restrictions of the profession deter girls from entering it. In some hospitals, hours of work have been reduced in order to increase the attraction. The West London Hospital has brought forward an entirely new scheme. Heretofore hospitals have not, as a rule, received girls for training under the age of 18, and a large number who leave school at 17 have to fill in a year before entering a nursing career. The West London Hospital proposes to fill this gap by providing training for girls as non-resident students who can get the hospital atmosphere and learn much of the work of the nurse. They will live at home and will wear overalls, not the nurse's uniform, at the hospital. There will be no restriction as to the use of cosmetics other than

good taste. At the end of the period the student will be free to decide whether she wishes to adopt the nursing career. Even if she does not she will not have wasted her time, for she will have learned much that is of practical use. The maximum hours of attendance will not exceed thirty in a five day week. Dinner and tea will be provided. Lectures will be given in the morning on hygiene, anatomy and physiology, invalid cooking, chemistry of foodstuffs, first aid and nursing. At the end of the course the students will sit for an examination and, if successful, will be accepted as probationers. At times some of the students will be admitted to the wards under the supervision of the sisters, but they will not be brought in contact with cases unsuitable for girls of their age.

PARIS

(From Our Regular Correspondent)

Oct. 29, 1938.

Annual Meeting of French Surgical Association

This year's congress of the French Surgical Association was held in Paris October 17-22, the date having been changed from October 6 on account of the recent international complications. The president of the present congress was Prof. Leon Imbert of Marseilles and the secretary was Professor Brocq of Paris.

TREATMENT OF RECENT CLOSED FRACTURES OF THE SPINE

The first subject chosen for reports and general discussion concerned the treatment of recent closed fractures of the spine. Drs. Charbonnel of Bordeaux and Sicard submitted the chief report on this question. Dr. Charbonnel's paper aimed to include only fractures of the bodies of the vertebrae without nerve complications. One's first duty is to attempt to educate the public how to transport a person whose spine is fractured. A great deal of harm may follow lifting the injured person by the shoulders or lower extremities. The best method is to place the patient face downward on a plank, a stretcher or a blanket supported at its four corners. If the injured person is found lying on the side or back, the utmost care should be taken in rolling him so as to place him face downward. Spontaneous reduction may take place if first aid is correctly applied. With the aid of a portable x-ray apparatus, films should be exposed without the patient being moved from his bed, as soon as possible after admission to a hospital. Both anteroposterior and lateral exposures must be made in order to give the surgeon essential information regarding the fracture. Both of the exposures can be made without the injured person being moved. Most frequently the dorsolumbar region, from the eleventh dorsal to the second lumbar vertebra, is involved. Even though the fracture be at a lower level, from the third to the fifth lumbar vertebra, the treatment is the same.

Based on a study of 217 cases without nerve complications, the results of the application of various nonoperative and operative methods show that the following conclusions can be drawn: The method of reduction termed hyperlordosis as advocated by Böhler should be employed as soon after the accident as possible. It aims only to place the upper and lower surfaces of the vertebrae parallel rather than to attempt to secure complete anatomic reduction. Many prefer placing the patient on the back rather than in the ventral position while reducing the fracture. No case has so far been reported of any serious nerve complication following the use of this method of reduction. The duration of the immobilization after reduction depends on the gravity of the fracture and the age of the patient. The Magnus method of permitting the patient to sit up in bed after four weeks and then encouraging him to walk unaided after six weeks of confinement to bed is applicable only to fractures with slight displacement and then only if the patient is under constant surveillance. The complete immobilization methods formerly employed are indicated at the present time only when the spinal injury is complicated by fractures of the extremities. Even when the nonreduction method is used, a plaster cast in a position of lordosis followed by early physical therapy is indicated. Operative methods such as the use of bone grafts are seldom used for fractures of the spine without nerve involvement because the results are not as satisfactory as with the Böhler method of early reduction for fractures in the dorsolumbar region. The use of bone grafts at an early period is to be recommended only in comminuted fractures of several adjacent vertebrae, oblique fractures which show rapid displacement following early reduction and plaster cast, and so-termed fracture-dislocations without nerve complications, if orthopedic methods are unsuccessful.

TREATMENT OF FRACTURES OF THE SPINE WITH NERVE COMPLICATIONS

The second half of the report was presented by Dr. Sicard of Paris. As to the relative frequency of spinal fractures with nerve complications, he had been able to find 195 cases, or 42 per cent, of fractures with nerve complications as compared to 467 without such a complication. Nerve lesions are most common in fractures involving the last cervical and first few dorsal vertebrae. At present, no clinical sign is pathognomonic of a complete involvement of the spinal cord. A complete, flaccid paralysis, the Babinski sign in extension, the defensive reflexes and the law of Bastian all lack absolute value. Histologic study of traumatic cord lesions teaches that the spinal cord does not possess the property of regeneration. Only three clinical signs can give an approximate evaluation of the severity of the lesions. These are (*a*) early and persistent priapism, (*b*) early edema of the lower extremities and (*c*) the rapid appearance of trophic changes such as decubitus over the sacrum or heels. When these are observed within a few days after the injury, they indicate complete destruction of the cord.

Some surgeons believe that, if the cord is destroyed, operative intervention is of no avail. If there is some lessening of the paralysis, efforts to maintain the integrity of the muscular and joint systems are all that are indicated. Others advocate immediate reduction, hoping that the decompression will lessen the damage to the cord, or they recommend laminectomy as a routine procedure. A third group has no fixed plan but tries to combine different methods of treatment. The conclusions of the author were that no treatment is of any avail if the cord is completely divided. The only hope of any improvement is that the symptoms may be only the result of an edema. Between these two extremes of opinion as to treatment one should not remain inactive in a case of fracture of the spine, complicated by paralysis, contrary to former teaching. The lesion should be regarded as curable and treatment begun as early as possible, either by reduction of the fracture or by laminectomy, the only contraindications being the existence of severe shock or the necessity of caring for a more urgent injury. In partial paralyses, reduction is always to be recommended, controlled at intervals by radiography and supplemented by early physical therapy. In complete paralyses, especially of the spasmodic type, reduction is followed by rapid recession of symptoms. If the paralysis is of the flaccid type, it is more difficult to decide on the indications. The most reliable diagnostic method is radiography. The presence of a bone fragment in the spinal canal, persisting after reduction, calls for laminectomy. Operation is indicated also if the articular processes are impacted. In general, if no amelioration of symptoms has taken place in from eight to fifteen days an exploratory laminectomy is justifiable. The higher the level of the fracture with nerve complications, the less favorable the prognosis. A flaccid paralysis is always to be regarded as a grave sign, indicating irreparable lesions.

The discussion was opened by Dr. Schotte of Ghent, Belgium, who advocated early reduction in the dorsal position.

In the treatment of cases with nerve root symptoms the first step should be epidural or paravertebral anesthesia in order to exclude cases of a purely functional character, so frequently encountered in malingerers in industrial surgery. Dr. Charles Mayer of Brussels, on the basis of a follow-up study of eighty-six personally observed cases, seventy without and sixteen with nerve complications, believed that orthopedic reduction can be regarded as a decided step in advance especially in cases with nerve complications. In the absence of such symptoms, reduction is indicated if the film indicates a crushing injury involving more than a fourth of the height of the vertebral body, especially in younger persons. If orthopedic reduction is correctly employed, indications for the use of bone grafts will rarely be encountered. Laminectomy should be done if the signs of cord injury appear late or recur after temporary recession. Dr. Lambret of Lille also endorsed the efficacy of early reduction as advocated by Böhler. Professor Leriche of Strasbourg said that there is no disagreement as to the value of immediate reduction in cases of moderate severity but that there is a divergence of opinion as to its application in the severe type. In the latter, if the nerve complications do not improve after reduction, immediate laminectomy is indicated, preceded by cystostomy to prevent kidney infection following catheterization.

STAPHYLOCOCCIC SEPTICEMIA

The second question for reports and general discussion was the clinical forms and treatment of staphylococcic septicemia. Dr. Jean Patel of Paris placed the staphylococcic septicemias as observed clinically in three groups, the acute, subacute and chronic forms. The first of these includes two subgroups. In the first the clinical picture is that of an acute infection in which it is impossible to find an atrium, a diagnosis becoming possible only after positive blood and urine cultures. In the second subgroup the general symptoms are as marked as in the first subgroup but a local lesion such as a furuncle, especially one on the lip or in the nose, precedes the onset of the symptoms of septicemia. In some cases in this second subgroup, after two or three days of severe general symptoms an acute osteomyelitis or multiple skin localizations attract attention to the existence of a general staphylococcic infection. In the second main group, the subacute, the clinical picture of a generalized sepsis shows signs of recession at a time when evidences of metastatic infection, in the form of osseous, articular, muscular, cutaneous and even pulmonary or renal foci, appear. In the third principal group, the chronic form of staphylococcic septicemia, the patient gives a history of recurrent staphylococcic localization in the form of furuncles, pulmonary or perinephric abscess or suppurative prostatitis.

As to the laboratory side of the question, animal experiments fail to reproduce the clinical pictures. The staphylococcus is carried by way of the veins, and inoculation of animals is followed by rapid metastatic foci. The staphylococcus secretes a toxin which possesses lethal properties toward all the cells of the body, although giving rise to the rapid formation of an antitoxin. The staphylococcus, far from being destroyed by the leukocytes, retains its virulence and is transported by the white blood cells through the venous circulation to the right ventricle, then to the lungs and left ventricle, and finally to the systemic circulation. The defensive agents are the opsinins and lysins, less often the leukocytes. The clinical picture is due to the direct action of the bacteria rather than to their toxin, except in the case of necrotic lesions which are the result of the action of the toxin.

The treatment of staphylococcic septicemia was the subject of a report by Dr. Moiroud of Marseilles, who reviewed the nonoperative measures, placing them in three principal groups. The first includes transfusions, which can stimulate blood formation and phagocytosis. As to immunotransfusions, their value is not settled. Although some favorable results have been obtained in some cases, in many others immunotransfusion has failed. The danger of shock and of dissemination of the infection as the result of transfusions of any form, must not be overlooked. The shock (foreign protein) treatment appears to be rational but is not to be recommended because of the danger of starting up a true septicemia. The same criticism can be made of the use of vaccines and of toxoids, the latter recommended by Ramon. If staphylococcus toxoid is employed, a preliminary test should always be made of the sensitivity of the patient. The bacteriophage treatment should be used only locally because the intravenous injection may be followed by serious symptoms. Chemotherapy, the use of acriflavine hydrochloride or mercurochrome, has given some good results if these products are employed in very minute doses. The operative treatment aims to clear up the atrium of infection but often it is impossible to find one.

The discussion was opened by Prof. Robert Debré, who stated that a true staphylococcic septicemia is rare as compared with transitory bacteremias, which are common. Recent studies show that the staphyloccus acts as the result of formation of a toxin rather than because of its virulence per se, and hence more is to be expected by giving specific antitoxins and toxoids than from any other treatment.

BERLIN

(From Our Regular Correspondent)

Oct. 17, 1938.

The Development of Neuroses

The last few decades of medical research have taught us to revise our concepts of the neuroses. The diagnosis of "psychopathies" of various types is purely descriptive. On the other hand the concept of neuroses, which has grown up around psychotherapeutic experience, takes into account the many predisposing factors which underlie a manifestation of abnormal psychic development and reactivity, and hypothecates that, granted correspondingly favorable circumstances, many neurotic persons would have remained healthy. Accordingly, it is considered that through psychotherapy one afflicted with a neurosis may be restored to mental health. The entire problem was recently summarized by Prof. J. H. Schultz, Berlin neurologist, who is thoroughly conversant with the field and who is the author of several books on neurosis. The hypothesis of heritability and improvement remains uncorroborated by genetic research; severe congenitally characterologic deficiencies are not classified as neuroses. A special difficulty in the field of neuroses lies in the fact that identical clinical syndromes may be based on wholly disparate anamneses. It is therefore impossible to establish a distinctive pathology of the nervous disturbances of heart action, speech, sleep, volition and so on. Rather an attempt must be made to identify the neuroses according to their development and to determine the "principal psychologic field of its source."

A classification of the neuroses, suggested by the author, is here of further assistance.

Since a neurosis or psychopathy is to be considered a developmental disturbance, a defective and morbid adaptation to life, all possible fundamental causes of such a maladjustment should be passed in review. Schultz places in his first category mental disturbances in which the patient has been completely dependent on another sick or otherwise afflicted person. For example, if the infant of an abnormal, or inferior mother reacts to the situation by neurotic manifestations it is plainly not the child but the mother who requires treatment. The child should be transferred to a wholesome milieu, where in a brief time it will become normal. The neuroses (of the children) in such cases are termed by Schultz fremdneurosen (exogenic neuroses); they are produced exogenically and based on allopsychic conflicts. In such cases it is not at all a question of special individual psychotherapy but of active supervision and above all change of environment.

Then there are the neuroses of bad habit, for example, nictitation based on childhood conjunctivitis with photophobia. Schultz says that these neuroses are physiogenic and as they are situated to a certain extent on the borders of personality he terms them randneurosen (marginal neuroses). For this group a complicated treatment based on a profound study of the personality is superfluous and useless; a simple active therapy will suffice.

It is otherwise with those neuroses which, psychogenic in the usual clinical sense, are based on normally experienced emotions such as grief, distress, anxiety or jealousy. As the "middle strata" of the psyche are disturbed in the neuroses Schultz terms them schichtneurosen (stratum neuroses). These originate (preponderately) in endopsychic conflicts. Various methods of therapeutics, none of which may be called genuine psychotherapy, are here applicable.

On the other hand, major psychotherapy is indicated only in the really severe neuroses. Since in the latter the "nucleus" of personality is altered, Schultz terms them the nuclear neuroses. It is possible to be affected with an exogenic, a marginal or a stratum neurosis and still retain a fairly sound general personality. But in a characterogenic nuclear neurosis the entire personality "has been" neurotically deformed from earliest childhood and a state of autopsychic conflict has been constantly present. In such cases the personality of the patient must be gradually reeducated, consciously and subconsciously, through a painstaking course of profound psychotherapy, which will need to continue for months or years. Schultz warns against a summary exclusion of the possibility of a nuclear neurosis in cases which present bronchial asthma, insomnia, anxiety states and so on; this is often done because the manifestations appear "too mild." Such symptoms may mask a deep-seated nuclear neurosis of wide ramifications. If a neurosis remains refractive to minor psychotherapeutic measures, it must never be concluded that psychic factors are not present; rather, says Schultz, an approach by major psychotherapy should be essayed whenever feasible.

ITALY

(From Our Regular Correspondent)

Oct. 30, 1938.

Insurance of Health of Workers

The Italian journal *Difesa Sociale* recently published statistics on the clinical and social work which has been carried on by the Istituto della Previdenza Sociale during the last year on laborers. The department of insurance against tuberculosis began functioning in 1929. During the year 9,345 persons were given medical care in hospitals of the department. Every year the number of those who are cared for by the department increases. The insurance against tuberculosis protects peasants as well as laborers. New hospitals and sanatoriums have been made available and the laboratories for diagnosis have been properly equipped. The department cared for 37,099 insured persons or members of their families in 1936 and 44,420 in 1937, with a total number of 8,565,023 days of hospitalization for the whole group.

The department of insurance against invalidism sent 15,796 insured persons or members of their families in 1936 and 20,720 in 1937 to have treatments at balnearies of mineral waters. The department manages fourteen balnearies, four of which are the property of the department. In the course of 1937, 4,997 convalescents of diseases which may cause invalidism were sent to sanatoriums for convalescents which are run by the department, with a number of days of sojourn of 141,746 for the whole group. The Institution for Social Providence has fifty-three trachoma dispensaries for both insured and noninsured persons. There were 24,500 trachomatous patients who were observed and treated in 1937. Consultations and treatments numbered about 1,265,445. The insurance to protect motherhood covers peasant women as well as laboring women. The department has seventeen offices for consultation, in which about 27,614 consultations from about 10,429 were given in the course of 1937. The mothers are cared for in the course of pregnancy, labor and the puerperium and are given guidance with regard to nursing their babies.

Temperature and Pulse of White People in the Tropics

Dr. Semmola, lieutenant of medical officers in Somaliland, took the temperature and determined the pulse rate in 600 normal healthy Italian soldiers in Somaliland. They have lived for some time in tropical zones under good hygienic conditions and they are well protected against the severity of the climate. The determinations were made early in the morning and at noon. The atmospheric temperature varied between 86 and 95 F. The humidity was between 60 and 70 per cent. The axillary temperature was above 98.6 F. in 28 per cent of the cases, but the subjects were in normal health. The author believes that the temperature of the body of normal white persons is physiologically increased in tropical lands and that the increase has no pathologic significance. The pulse rate in tropical lands is normal in the morning (from 70 to 74 beats a minute) and increased at noon (from 80 to 84 beats a minute).

POLAND

(From Our Regular Correspondent)

Oct. 22, 1938.

Arterial Blood Pressure in Diseases of the Eye

In the Ophthalmologic Clinic of Warsaw University Professor Lauber and Dr. Sobański have found that serious disorders of the eye can be due to a disproportion between blood pressure and intra-ocular pressure. The disproportion can result from an increase of intra-ocular pressure or from a decrease of blood pressure. The imbalance of both these pressures may cause an insufficient supply of blood to the retina and to the optic nerve. This phenomenon is exemplified in the development of optic nerve atrophy in tabes dorsalis. In this disease, optic nerve atrophy progresses gradually as the blood pressure sinks and stops or progresses more slowly when the blood pressure increases. Constitutional arterial hypotension or hypotension caused by antisyphilitic therapy provokes a greater involvement of the eye in tabetic patients. Hypotension in the retinal arteries was found not only in tabes dorsalis, but also in many "idiopathic" cases of atrophy of the optic nerve and in pigmentary degeneration of the retina. These facts are important in the therapy of tabes dorsalis for controlling atrophy of the optic nerve. In every case of tabes dorsalis the proportion of the arterial to the intra-ocular pressure has to be controlled either by increasing the former or by decreasing the latter. The decrease of intra-ocular pressure is more safely and easily obtained than is an increase of blood pressure. In every case the authors instilled pilocarpine or physostigmine and, if its effect on the intra-ocular pressure was not sufficient, cyclodialysis was performed. After the prevention of eye involvement, antisyphilitic treatment was begun. The effect of antisyphilitic therapy on blood pressure has to be constantly watched and in case of a great decrease of blood pressure it has to be stopped. The authors suggest that in most cases of tabes dorsalis serious eye complications can be prevented if adequate prophylactic measures are taken.

The Number of Physicians in Poland

According to the official report of the Polish Medical Chamber, the total number of physicians practicing in Poland was 12,215, or one physician for 2,833 inhabitants. The percentage of Jews among the physicians is about 33.4, while Jews are only 9.6 per cent of the whole population in Poland. Among the chief causes of deaths of physicians in the last year were cardiovascular diseases 40.5 per cent, tuberculosis 17 per cent, malignant tumors 13 per cent, epidemic diseases 8 per cent and suicide 4 per cent.

Tuberculosis in Children

Dr. T. Mogilnicki read a paper before the Warsaw Pediatric Society on the incidence of tuberculosis in children in Poland. His data are based on researches on tuberculosis in various districts in children in the elementary and high schools, in nurslings and in children from 1 to 6 years of age. In the schools attended by poor children the Pirquet test was positive in 38 per cent in children of 6 and in 44 per cent in children of 7 years, while in schools attended by rich children the Pirquet test was positive in 18 per cent in children of 6 and in 19 per cent in children of 7. In the Jewish children the percentage of positive Pirquet tests was higher by more than 10 than in Christian children. This test is more frequently positive in children in large cities than in rural children in the West of Poland. In the East of Poland, where the financial conditions of the rural population are worse, the Pirquet test is more frequently positive in the country than in cities. The author determined the total number of tuberculous children in Poland to be about 370,000. The tuberculosis mortality of children at the age of 1-5 years is high in Poland, being 38 per cent as against 5.7 in Germany, 5.0 in Denmark, 15.0 in Esthonia, 12.0 in France, 8.2 in Norway and 7.3 in Sweden per 10,000 of the population of this age. These researches on tuberculosis in children have shown that the most frequent source of infection is tuberculous persons in the environment of the children. The author believes that the poor state of health of the young generation in Poland is mainly due to an inadequate campaign against tuberculosis by the government, resulting from inadequate funds. He urges the x-ray examination of school children and teachers in order to isolate the tuberculous subjects as sources of infection and to be able to start treatment in early stages of the disease.

CAPE TOWN

(From Our Regular Correspondent)

Oct. 12, 1938.

The Medical Congress

Last month the Medical Association of South Africa (British Medical Association) held its thirty-second medical congress at Lourenço Marques, Portuguese East Africa, for the first time in its history beyond the borders of the Union of South Africa. The meeting was held at the invitation of the health services of Mozambique and under the patronage of the Portuguese minister for colonies, Dr. Francisco Viera Machado. It was an unqualified success and was attended by doctors from the Union of South Africa, Rhodesia, Angola and the Portuguese colonies. Thus there was an opportunity to discuss matters of common interest. An attractive program of entertainment, including native dances, open air fetes and excursions to the game reserves, somewhat interfered with the excellent professional program, but the sectional and plenary meetings were well attended and the discussions, in Portuguese and English, were animated and instructive. From the old Portuguese universities of Coimbra and Lisbon, delegates attended, among them being the deans of faculties of medicine, who contributed interesting papers. The president of the congress was Dr. Vasco Palmeirim, chief of the local department of health, and the organizing secretary was Dr. Abel de Carvalho, a local radiologist. Among the most interesting papers were those on malaria by Professor Froilano de Melo of Nova Goa, on heliotherapy by Professor Grober of Jena, on bronchopulmonary suppuration by Dr. Nunes de Almeida of the Instituto Portugues de Oncologia of Lisbon, and on the extracardiac arteries in the circulation of the myocardium by Prof. Maximino Correia of Coimbra. The discussions on the nutritional problems of the natives were interesting, while one plenary session was devoted to discussion of the treatment of peptic ulcer, the consensus favoring conservative treatment as against gastrectomy and emphasizing that gastric and duodenal ulcers are not merely local lesions. Another instructive session was devoted to comparative medicine. Since 1928 the medical association has invited the veterinary surgeons to participate in the congress, and the combination has been mutually advantageous. At this congress Dr. Gilles de Kock of the research institute at Onderstepoort, which is associated with the memory of Sir Arnold Theiler, contributed a paper on the role assumed by game and wild animals in the spread of human disease. Both the Union of South Africa and Mozambique are keenly interested in their game reserves. The present outbreak of foot and mouth disease and the possibility that the larger antelopes and wild bovines might be carriers of disease enhanced the interest in the discussion. A second paper, on the risks of introducing yellow fever by airplanes, was read by Dr. Park Ross, who demonstrated his method of disinfection by means of a special spray. The next congress will be held at Port Elizabeth next year but will be overshadowed in importance by the congress of 1941, when the British Medical Association will hold its annual meeting, jointly with the South African Association, at Johannesburg. An organizing committee has already been appointed to make preliminary arrangements for that meeting.

Rickettsiosis

Pijper and Crocker, from the former's private laboratory at Pretoria, have made an intensive study of rickettsiosis in South Africa, the results of which they have published. The three types—tick bite fever, murine or rat flea or sporadic typhus, and louse typhus—prevalent in the country are considered to be a group by themselves. They have come to the conclusion that South African typhus is not identical with classic typhus from their extended study of the serologic differences in the agglutinin titers of a large number of rabbits infected with the Basutoland strain of epidemic typhus. They found a sporadic typhus virus immunologically identical with a virus in rats that protected against tick bite fever but not against epidemic typhus. This sporadic form of typhus dies out in guinea pigs when brain injections are used, while the epidemic form can be kept indefinitely by this method.

Smallpox and Amaas

The relationship between smallpox and the type of it locally known as amaas, which appears to have affinities to the type known in Europe as alastrim, has long been a matter of controversy. A posthumous paper by Dr. George Hay is devoted to the clinical and epidemiologic features of amaas. The author concludes that the natives penetrated into the northern Transvaal in two separate streams, which have not intermingled until recent times. The southern group shows evidence of infection by genuine classic smallpox; the northern group shows signs of infection by a smallpox-like disease that leaves little scarring and disfigurement. Both types are readily controlled by vaccination, but the author suggests that the vaccine used should contain strains of both types, particularly that of the light or amaas type. Vaccination, although compulsory by law, has been much neglected, with the result that the nonimmune population is rapidly increasing.

Marriages

Paul Le Roy Martin, Skykomish, Wash., to Miss Evelyn Rosetta Goodenough, July 24.

Robert E. Nelson to Miss Margaret Hoffman, both of Harrington, Wash., August 26.

Edwin G. Lee, Colfax, Wash., to Miss Elrina Ellerbrock of Los Angeles, July 12.

Verne W. Ritter to Mrs. Blanche Bullock Burns, both of Seattle, August 6.

Edwin S. Weisfield to Miss Mildred Schonfeld, both of Seattle, August 4.

Tamara J. Kabalkin, Seattle, to Mr. Arthur Sternoff, July 15.

Deaths

Patrick Eugene McSweeney ● Burlington, Vt.; University of Vermont College of Medicine, Burlington, 1886; past president of the Chittenden County Medical Society and the Vermont State Medical Society; adjunct professor of obstetrics at his alma mater, 1895-1914, instructor of gynecology, 1900-1903, professor of gynecology, 1911-1925, professor of obstetrics, 1914-1925, and since 1925 emeritus professor of obstetrics and gynecology; member of the New England Obstetrical and Gynecological Society and the New England Surgical Society; fellow of the American College of Surgeons; attending surgeon to the Bishop de Goesbriand Hospital, Burlington, Fanny Allen Hospital, Winooski, and the Porter Hospital, Middlebury; consulting gynecologist to the Mary Fletcher Hospital; aged 76; died, September 2, of diabetes mellitus, chronic myocarditis and hypertension.

Ernest Coleman Levy, Richmond, Va.; Medical College of Virginia, Richmond, 1890; professor of histology, pathology and bacteriology at his alma mater, 1897-1900, and in 1925 was professor of preventive medicine; health officer of Richmond, 1906-1917, and director of public welfare, 1919-1924; health officer of Tampa, Fla., 1925-1928; served during the World War; charter fellow and past president of the American Public Health Association; past president of the Richmond Academy of Medicine and Surgery; author of numerous papers on public health topics; aged 70; died, September 29.

Julius C. Le Hardy ● Major, U. S. Army, retired, Port St. Joe, Fla.; University of Georgia Medical Department, Augusta, 1893; veteran of the Spanish American and World wars; served as a reserve officer on active duty for many years; entered the medical corps of the regular army as a first lieutenant in 1927 and retired in the same year under a special act of Congress approved March 3, 1927, for disability in line of duty; in 1930 was retired as a major under act of June 21, 1930; aged 67; died, September 3, of a self-inflicted bullet wound.

George Newton Bell, West Hartford, Conn.; Yale University School of Medicine, New Haven, 1892; member of the Connecticut State Medical Society and the New England Surgical Society; fellow of the American College of Surgeons; consulting surgeon to the Hartford, Hartford Isolation and Mount Sinai hospitals, Hartford; Litchfield County Hospital, Winsted, Home for Crippled Children, Newington, Memorial Hospital, Manchester, Rockville City Hospital, Rockville, Bristol (Conn.) Hospital; aged 68; died, September 10, of cerebral hemorrhage.

Russell Sturgis Rowland, Detroit; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1901; member of the American Pediatric Society and the American Academy of Pediatrics; was awarded a silver medal for his excellent presentation of studies on lipoid metabolism at the annual meeting of the American Medical Association in Detroit in 1930; on the staffs of the Children's, Harper and Woman's hospitals; aged 64; died, September 29, of cerebral thrombosis.

Wesley Harold McKnight, Bedford, Ind.; Indiana University School of Medicine, Indianapolis, 1922; member of the Indiana State Medical Association; past president and secretary of the Lawrence County Medical Society; served during the World War; on the staff of the Dunn Hospital; aged 42; died, September 9, in the Passavant Memorial Hospital, Chicago, of acute bacterial endocarditis.

James Edward Neighbors ● Poughkeepsie, N. Y.; Vanderbilt University School of Medicine, Nashville, Tenn., 1920; on the staffs of the Vassar Hospital and St. Francis Hospital, Poughkeepsie, Sharon (Conn.) Hospital, Butterfield Memorial Hospital, Cold Spring and St. Benedictine Hospital, Kingston; aged 40; died, September 13, in St. Luke's Hospital, New York.

Edward Schnaper ● New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895; fellow of the American College of Surgeons; gynecologist to the Lebanon Hospital and consulting obstetrician to the New York Nursery and Child's Hospital; aged 63; died, September 3.

Daniel Stevens Latham ● Cranston, R. I.; Medical School of Maine, Portland, 1893; for many years health officer; at one time served in the house of representatives and later in the state senate; formerly a member of the school committee; aged 71; died, September 21, of coronary thrombosis.

Robert Edwin Holmes, Harrisburg, Pa.; Eclectic Medical Institute, Cincinnati, 1894; member of the Medical Society of the State of Pennsylvania; at one time member of the state board of medical education and licensure; for many years on the staff of the Harrisburg Polyclinic; aged 78; died, September 6.

Archie J. McDowell, Soldiers Grove, Wis.; Milwaukee Medical College, 1898; member and past president of the State Medical Society of Wisconsin; formerly member of the state legislature; for many years president of the board of education; aged 74; died, August 28, of peritonitis and strangulated hernia.

William Alexander Hackett, Detroit; University of Toronto Faculty of Medicine, 1894; member of the Michigan State Medical Society; fellow of the American College of Surgeons; on the staff of St. Joseph's Mercy Hospital; aged 70; died, September 16, of carcinoma of the urinary bladder.

Woodrow Charles Pickering, Columbus, Ohio; Ohio Medical University, Columbus, 1901; member of the Ohio State Medical Association; for many years police and fire department physician; aged 64; died, September 22, in the Grant Hospital of acute monocytic leukemia.

Guy Seward, Fremont, Neb.; Barnes Medical College, St. Louis, 1902; member of the Nebraska State Medical Association; veteran of the Spanish-American and World wars; aged 64; died, September 6, in the Nicholas Senn Hospital, Omaha, of cerebral thrombosis.

Worthington Seaton Russell ● Woodbury Falls, N. Y.; University of the City of New York Medical Department, 1893; at one time an acting assistant surgeon with rank of lieutenant junior grade in the U. S. Navy; aged 68; died, August 16, of coronary occlusion.

Louis Alden Pindler ● Los Angeles; University and Bellevue Hospital Medical College, New York, 1920; on the staff of the White Memorial Hospital; aged 45; died, October 9, in the Lincoln Hospital of an infection resulting from a splinter in his hand.

William Edward Gorman, Springfield, Mass.; Atlantic Medical College, Baltimore, 1909; aged 69; on the staffs of the Mercy Hospital and the Wesson Hospital, where he died, September 9, of cerebral thrombosis, left hemiplegia and arteriosclerosis.

Harold David Haney, Western State Hospital, Tenn.; University of Tennessee College of Medicine, Memphis, 1934; member of the Tennessee State Medical Association; on the staff of the Western State Hospital; aged 29; died, September 13.

Herman Walter MacDonald ● Newcastle, Ind.; Indiana University School of Medicine, Indianapolis, 1909; on the staff of the Clinic Hospital; aged 55; died, September 21, in the Robert W. Long Hospital, Indianapolis, of peritonitis.

Frank Willis Almond ● Boise, Idaho; McGill University Faculty of Medicine, Montreal, Que., 1919; served with the Canadian Army during the World War; county health officer; aged 50; died, August 26, of coronary thrombosis.

Edward Francis Brennan, Norwood, Mass.; Tufts College Medical School, Boston, 1908; member of the Massachusetts Medical Society; formerly chairman of the school committee and board of health; aged 54; died, September 9.

Butler Hall Sanchez, Plant City, Fla.; Atlanta Medical College, 1914; member of the Florida Medical Association; served during the World War; aged 51; died, September 21 at St. Joseph's Hospital, Tampa, of pneumonia.

Frank Alonzo Kirby ● New Haven, Conn.; Columbian University Medical Department, Washington, D. C., 1895; aged 68; died, September 5, in Grace Hospital, of toxic purpura following transfusion and pernicious anemia.

Walter C. Head, Bessemer, Ala.; Birmingham Medical College, 1901; past president of the board of education; member of the Medical Association of the State of Alabama; aged 63; died, September 3, of carcinoma of the pancreas.

David Wallace Mott, Los Angeles; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1881; formerly member of the state senate; at one time mayor of Santa Paula, Calif.; aged 83; died, August 26.

Albert Morton Shaw ● Nauvoo, Ill.; Medical College of Ohio, Cincinnati, 1890; formerly secretary of the Hancock County Medical Society; aged 73; died, September 13, in Burlington, Iowa, of pyelonephritis.

William D. Brydone-Jack, Vancouver, B. C., Canada; L.R.C.P., L.R.C.S., Edinburgh, 1884; formerly coroner; for many years on the staff of the Vancouver General Hospital; aged 78; died, September 1.

Robert Stewart Royce, Brooklyn; University of Vermont College of Medicine, Burlington, 1889; member of the Medical Society of the State of New York; aged 72; died, August 16, of angina pectoris.

Francis W. McNamara, Chicago; Chicago Medical College, 1889; for many years county jail physician; aged 71; died, September 16, in the Presbyterian Hospital of cerebral hemorrhage.

Thomas Blanchard Herrick ● Manson, Iowa; State University of Iowa College of Medicine, Iowa City, 1912; served during the World War; aged 52; died, September 2, of coronary thrombosis.

Ernest Bonner, Camden, Ala.; Bellevue Hospital Medical College, New York, 1898; member of the Medical Association of the State of Alabama; aged 63; died, September 19, of myocarditis.

Leonard A. Muns, Smithfield, N. C.; College of Physicians and Surgeons, Baltimore, 1885; aged 76; died, August 30, in the Johnston County Hospital of a fracture of the hip and pneumonia.

Francis Paul Kean MacMurrough, Jersey City, N. J.; St. Louis College of Physicians and Surgeons, 1886; served during the World War; aged 73; died, September 6, of heart disease.

Edward Levis Prizer, Southern Pines, N. C.; Harvard University Medical School, Boston, 1912; aged 53; died, September 7, of hypertrophic arthritis, chronic nephritis and uremia.

Brown Lee Puraifull, McKee, Ky.; St. Louis College of Physicians and Surgeons, 1920; aged 43; died, September 2, in the Veterans Administration Facility, Lexington, of pneumonia.

Homer C. Behymer, Amelia, Ohio; Eclectic Medical Institute, Cincinnati, 1895; aged 69; died, September 1, in St. Francis Hospital, Cincinnati, of arteriosclerosis and heart disease.

Victor Josephson ● Chicago; College of Physicians and Surgeons of Chicago, 1894; aged 70; died, September 11, of coronary thrombosis and arteriosclerotic heart disease.

William Roy Johnston, Natchez, Miss.; Howard University College of Medicine, Washington, D. C., 1902; aged 60; died September 6, of encephalitis lethargica and influenza.

Perry Xavier Martin Jacobs, Cincinnati; Cincinnati College of Medicine and Surgery, 1899; aged 66; died, September 12, of diabetes mellitus and cirrhosis of the liver.

Robert H. Jacobs, Joppa, Ill.; Kentucky School of Medicine, Louisville, 1894; served during the World War; aged 71; died, September 9, in Metropolis of paralysis agitans.

Jane Orr, Oakland, Calif.; Tufts College Medical School, Boston, 1901; member of the California Medical Association; aged 69; died, August 19, of coronary sclerosis.

William Porter Moore, College Grove, Tenn.; Vanderbilt University School of Medicine, Nashville, 1894; aged 65; died, September 1, of complications following typhoid.

Harry Parke Beatty, Chicago; University of Wisconsin Medical School, Madison, 1930; aged 33; died, September 4, of injuries received in an automobile accident.

Albert Herman Lasere ● Sioux City, Iowa; University of Illinois College of Medicine, Chicago, 1931; aged 35; died, September 8, of carcinoma of the stomach.

Burton Willis Swayze, Allentown, Pa.; Jefferson Medical College of Philadelphia, 1891; aged 70; died, August 1, in the Sacred Heart Hospital of carcinomatosis.

Nathaniel Burwell, Shepherdstown, W. Va.; University of Maryland School of Medicine, Baltimore, 1907; died, September 16, of pulmonary tuberculosis.

Atchie M. Nicks, St. Joe, Ark.; Memphis (Tenn.) Hospital Medical College, 1888; aged 75; died, August 28, of valvular heart disease and arthritis.

Morris Leon Leevenson, Chicago; College of Physicians and Surgeons, Baltimore, 1893; aged 76; died, September 27, of carcinoma of the stomach.

Oliver Perry Erwin, Medora, Ill.; Missouri Medical College, St. Louis, 1887; at one time mayor; aged 75; died, September 5, of cystitis.

Augusta Mordell Carlson, Boston; Boston University School of Medicine, 1914; aged 58; died, August 15, of diffuse cerebral sclerosis.

Hugh Jenkins, Tucson, Ariz.; Rush Medical College, Chicago, 1881; aged 81; died, September 19, of acute nephritis.

Nelson Potter, St. Louis; Barnes Medical College, St. Louis, 1905; aged 75; died, September 6, of uremia.

Correspondence

PRACTICAL MEDICAL ECONOMICS

To the Editor:—I have been able to make substantial financial progress in the past two years without increase in gross income and in spite of the business "recession" and even decrease in gross income during the past fourteen months, in a manner which could be used with profit and satisfaction by any harassed practitioner. There are few, if any, practitioners whose gross incomes would not allow them to live respectably and save money for old age if the practitioner did not make so many mistakes in management.

Record keeping is a great help. I got out the records of the people who had been guilty of gross nonpayment of obligations since 1925. The social and economic history of every one of these families and people was reviewed to see, principally, whether we had done a charitable act in serving them without being hard boiled about the pay. The result of the analysis was enlightening and profitable. Just about 5 per cent of these account losses were to people who could not pay at that time or any other and who deserved to be helped. The remaining 95 per cent were people whose protestation of poverty was a misrepresentation. They paid for their groceries, automobiles, gasoline, liquor, tobacco, vacations and everything else except their medical service. Location in a small community where one is able to know what the patients are doing when they are not ill, and how they live, has its analytic advantages. For the most part, the average individual's or family's claim that they cannot afford or pay for good medical service is not substantiated in fact. I have become so sensitized to the type and approach of the patient with the false claim of poverty that the first step of such an individual across the consultation room threshold and the first glance decide the credit problem, right there and then. Practitioners have for so many years been the dupes of every unscrupulous deadbeat, and still are, that a great many of the present (and threatening future) economic troubles of the profession arise from this. Having given so much so easily, the practitioner is now asked to give more.

Another fallacy is the inferiority complex-induced idea that it is necessary to "keep up with the Joneses." Most of the things that the Joneses do are an unmitigated bore and an offense to a moderately active intellect, besides, for the most part, being plain stupid. The entire family is much happier since we stopped purposely and energetically pursuing happiness at the bridge club, the golf course and over the social alcohol, and lived a more rational life. I have come to agree with a well known psychiatrist who expressed his conviction that the most of the wild pursuit of pleasure was but a fugue, an attempted flight from reality.

In another way I have saved money: I have gotten so that I can throw the average drug salesman, specialty salesman, instrument and gadget salesman out of the office without the least compunction whatever. Some of the salesmen were indignant, but I take notice that after these salesmen's day's work is done they go home or to their hotel and sit down and worry about their own troubles and not about mine, and why should I worry about theirs? This leads to the corrollary that many practitioners have much too much of the wrong kind of equipment and many many too many pills, liquids, ointments and plasters, all of which cost them good money. Which also leads to the observation that it is not necessary to load the patient up with several kinds of medicine he does not need just to make him think you are doing something for him and to keep him satisfied. Many practitioners believe this semihumbug practice is necessary, but the conviction arises from the physi-

cian's lack of sufficient self respect and lack of confidence that his therapy is correct and the best available for the case at the time.

Another important way I have straightened out financial affairs comes under the head of "Trust no future, howe'cr pleasant, let the dead past bury its dead, act, act in the living present, heart within and God o'erhead" (Longfellow), which, applied to medical practice, means Do not wait for future and perhaps never eventuating increased prosperity to plan your budget, savings and old age security. If increased income and prosperity come, fine, but in the meantime figure that life will be ever thus and plan accordingly. The average, well perhaps not the average but far too many, physicians are intending to plan their lives next week or next month or next year. Well, that time never comes, and they go on and on and on and on and know not where they are going. But I know where they are going. They are going where all unpractical fools deserve to go, physician or any one else. Do you remember Dickens's Micawber? When it was too late he philosophized: Income of five crown three shilling and expenditures of five crown five shilling, result misery; income of five crown three shilling and expenditures of five crown one shilling, result happiness.

GEORGE W. WILLIAMSON, M.D., Dundee, Mich.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

RESTORATION OF PATENCY OF OVIDUCTS

To the Editor:—A woman aged 30 is desirous of becoming pregnant. Pregnancy occurred at the age of 27 but was interrupted because of financial considerations she says, although I think there was some other reason. She has been advised as to the physiologic period and repeated efforts have been made. The tubes were recently tested for patency with air up to 200 mm. of mercury pressure and also with iodized oil and pictures were taken. The pictures reveal patency only to the fimbria with no leakage in the abdominal cavity. Is there a retrograde procedure whereby these tubes can be opened? Please give references to a description of this and your opinion on its results. M.D., Florida.

ANSWER.—Transuterine inflation with air or gas, commonly known as the Rubin test, is the only nonoperative measure that might open the obstructed tubes. This procedure, primarily employed for diagnosis, results in reestablishing patency, followed by pregnancy in a modest percentage of cases.

Abdominal operative intervention has been looked on with greater favor during recent years, particularly in cases such as the one described.

NO WAY TO INCREASE HEIGHT OF ADULT

To the Editor:—A man aged 29 is 5 feet 4 inches (163 cm.) tall and weighs 120 pounds (54 Kg.). He is in good health but comes every day to ask if it is possible for him to grow at least 5 inches more. I tell him it is impossible, but he insists, saying he read in an American paper about a pituitary gland extract and a certain class of exercises for increasing the height. Is this possible?

A. JARAMILLO, M.D., Colombia, South America.

ANSWER.—In the present state of medical knowledge we know of nothing capable of adding 5 inches in stature to a patient 29 years of age. In all probability this patient's growth was completed from eight to ten years ago. Attempts at the present time at increasing height through the use of pituitary extract are more apt to lead to symptoms of acromegaly than to increased height. Perhaps the taking of a roentgenogram of the wrist and a demonstration that ossification has been completed, together with an explanation as to why no further growth is possible, would serve to satisfy the patient's mind. Once the epiphyses have joined the shaft of the long bone, growth is complete so far as height is concerned. Exercise likewise offers nothing; neither does a combination of exercise and endocrine products.

EXTRACTS FROM FOODS FOR CUTANEOUS TESTS

To the Editor:—What is the best way to obtain dried protein extracts from foods for the cutaneous testing of allergic patients? Here in Mexico we have only those extracts prepared in the United States and since we have many foods unknown in that country, I am interested in obtaining the protein extracts from those foods.

LUIS PEREZ PARRA, M.D., Guadalajara, Mexico.

ANSWER.—The simplest method for obtaining atopens is that of extracting and drying the fresh food. Those foods which contain the juice require no solvent. The material is placed in a grinder or juicer. The juice obtained is filtered through filter paper and may then be dried either by passing a current of air over it or preferably under negative pressure in a vacuum desiccator containing sulfuric acid or some other dehydrating agent. In this group it is best to select ripe or nearly overripe fruits or vegetables, so that the pectin content may be at a minimum. Materials that contain little or no juice should be ground thoroughly and soaked in distilled water with frequent shakings for several days. During this period a small amount of toluene should be used as a preservative. The solution should then be dried as described.

Materials rich in fats require extraction with anhydrous ether after grinding and before aqueous extraction. This method, while simple, usually gives gummy material even after thorough drying. The nature of the substance, however, does not interfere with scratch tests.

Another method, which however requires considerable laboratory apparatus and training, consists of allowing the juice or extraction to fall, drop by drop, into acetone kept at minus 20 C. The final proportion of the material added to the acetone should not be more than one part of the material to nine parts of the acetone. The acetone is then filtered off and the precipitate is dried in a desiccator and then ground in a mortar. Solid carbon dioxide (dry ice) may be used in the acetone for keeping the temperature at minus 20 C. or below.

DISCOVERY OF PHENOLPHTHALEIN AS LAXATIVE

To the Editor:—How and where was phenolphthalein discovered to have laxative properties? Is this dye ever used in the making of wine?

M.D., New Jersey.

ANSWER.—The laxative value of phenolphthalein was discovered by Zoltan von Vamossy, who published the paper announcing it in *Therapie der Gegenwart* 4:201 (May) 1902.

The story usually goes that the Hungarian government decided to use phenolphthalein for the denaturing of wine made from the husks of grapes. These artificial wines are made by adding sugar water to the pressed husks of grapes and allowing the mass to ferment. Soon after the law went into effect, it is said, a mysterious diarrheal disease overtook a large proportion of the poorer inhabitants of Hungary, which, it was discovered, was due to the denaturant, phenolphthalein. This story is disputed by Vamossy, who says that it is "unfair to the Hungarian government to think that it would have permitted anything to be added to any drink without previously investigating its effect on the health of the people."

Vamossy also says "That the laxative properties of this drug could not possibly have been discovered by the drinking of adulterated wines may be noted from the following: Phenolphthalein turns pink in an alkaline solution even in a dilution of one to ten millions, and as the amount of phenolphthalein that is needed to detect these wines is infinitesimal (0.1 Gm. to 100 liters), it would be necessary, even if 1 Gm. were used, to drink at least 10 liters of the wine before diarrhea would develop."

This, Vamossy says, is the true story of its discovery:

"When it was proposed to denature artificial wines with phenolphthalein, I was first entrusted with the task of investigating the harmlessness of this reagent. I carried on numerous experiments on animals with negative results. One small pet dog that received 6 Gm. of phenolphthalein became quite constipated and passed fecal masses as if it had been on a diet of bones, but these fecal masses became crimson on the addition of alkali. Following this the drug was tried on man. A colleague took 1 Gm. and I took 1.5 Gm. of phenolphthalein at 11 a. m. The effect appeared between 1 and 3 p. m. that afternoon, in the form of three to five watery evacuations accompanied by some borborygmi. A similar action occurred that evening and also the next morning but in no way disturbed us from our regular afternoon laboratory work or our night's rest. I became convinced that I had discovered a laxative of merit. It was easy to take owing to its tastelessness. It did not gripe and did not seem to have any drastic effect even in large doses (1.5 Gm.). It was later found that 0.1 Gm. taken in the evening emptied the contents of the colon the following morning, resulting in a copious but soft movement."

VOMITING AND HIGH EXTERNAL TEMPERATURE

To the Editor:—A boy aged 10 years complains of itching, nausea and a sensation of heat during warm weather. These are followed in several days or weeks by vomiting. When he rides in a car to the hospital, 30 miles, the vomiting is stopped but he complains of being hot until he is given dextrose intravenously, which helps him. The attacks are not associated with fever, constipation or diarrhea. After the vomiting spells he has an enormous appetite for several weeks. As an infant he was given several formula diets and finally S M A and later Dryco. He could not take cow's milk until he was 2 years old and always had either constipation or diarrhea. When 2½ he had diphtheria and vomiting spells at intervals lasting between four and ten hours. At about 4 years of age he had vomiting and convulsions and intestinal infection during a spell of extremely hot weather (118° F. for four days). During the subsequent two summers he was at the beach, where it was cool, and had several slight spells and continued to itch at intervals. When 6 years of age he had infantile paralysis and vomiting, from which he recovered without much paralysis but was left extremely nervous. In the summer of 1937, when 9 years old, he complained of a sensation of heat, itching and headache. He rode horseback in the mountains but had a vomiting spell, after which the appendix was removed. Five weeks later there was more vomiting and hemorrhage. He was given dextrose intravenously. In February 1938 he started vomiting blood, which was checked by dextrose intravenously. He had a similar attack May 21, 1938. The temperature where he lives is dry and hot, between 105 and 110. When taken out of this climate to the coast, where it is damp and cool, he has improved promptly. He gives a positive cutaneous test to casein, lactalbumin, orange, eggs, tomatoes, carrots, spinach, cabbage, corn, lima beans, bananas, beets, radishes, grapes, raisins, apricots, artichokes, chocolate, chicken and mustard. Any suggestions for diagnosis and treatment will be appreciated.

M.D., California.

ANSWER.—The heat-regulating mechanism of infants and children is more labile than that of adults. The symptoms enumerated in the history of this boy are rather vague but simulate the injurious effects of heat. The cutaneous eruption is probably also an effect of the high external temperature. As the patient was relieved by summering on the coast, it would seem that this is the most rational form of therapy for him.

ETIOLOGY OF GLAUCOMA

To the Editor:—I have recently read an article entitled "The Symptomatology of Glaucoma and the Problem of Pathogenesis," by André Magitot, translated from the original articles in the *Annales d'oculistique* (**100**: 356 [May], 439 [June], 565 [July], 609 [Aug.] 1929) by Hallard Beard. In some respects this article is so very different from sections on glaucoma in such books as Berens' and Gifford's recent textbooks for students that I am wondering whether the ideas presented in Magitot's article are commonly accepted by American ophthalmologists.

M.D., Nebraska.

ANSWER.—The series of articles by Magitot represents a somewhat individual point of view which is not shared in most of its essentials by the majority of ophthalmologists. His view represents a reaction from the older view that glaucoma is always due to an obstruction of the chamber angle. It is now admitted that a vascular factor plays a part in some cases, especially in acute glaucoma; but obstruction of the chamber angle is still considered an important factor. His view that chronic glaucoma should be treated by general measures is not accepted by most ophthalmologists, since the results of operations which secure more efficient filtration are known to be successful in the majority of cases. There is a great deal of other evidence that obstruction of the filtration angle cannot be neglected in glaucoma.

CORNEAL ULCER FROM CATALIN?

To the Editor:—A patient has had a corneal ulcer. He was employed by a firm using catalin for plastic products and has been struck in the left eye on several occasions with catalin. Could this be a predisposing cause? What is the action of catalin on the cornea?

M.D., Massachusetts.

ANSWER.—Catalin is a synthetic resin, produced by the chemical combination of phenol and formaldehyde. It has the general appearance of honey and may be molded into suitable shapes to produce the desired manufactured objects. Solidification takes place as a result of curing, which is induced by heating. The completed objects are extremely hard and in some respects resemble bakelite, in others synthetic resin. Catalin products may be given a wide variety of colors as a result of the addition of aniline dyes. In some instances a rainbow or marbleized effect may be desired, which may mean that several aniline dyes have to be utilized. Finished catalin products are apparently harmless, but in the manufacture of catalin numerous injuries have taken place, chiefly involving the eyes. In *Industrial Hygiene*, a publication of the Department of Labor of New York State (**15**, August 1936) there may be found an extensive discussion of the manufacture, use and toxic properties of catalin. In the investigation there reported, it was noted that 55 per cent of the workers examined presented nondisabling conjunctivitis and 11 per cent an inflamed nasal mucosa and that more than 94 per cent presented some evidence of irritation of the upper respiratory tract. Industrial dermatitis was not detected. Workers examined complained that the entry of foreign bodies into their eyes was common and troublesome. Further, complaints were encountered as to eye discomfort, lacrimation and photophobia. However, these conditions were noted chiefly when workmen left the workpoint at the end of the day or at noontime, and particularly the eye complaints were more noticeable in colder weather.

In view of the fact that catalin is a known eye irritant, leading chiefly to low grade conjunctivitis, it is reasonable to believe that it might play some part in the occurrence of corneal ulcers. It may be believed that particles of larger sized dust entering the eye may have constituted a more direct factor in initiating the ulcer, which in turn may have been aggravated as a result of the irritant properties of the vapors of formaldehyde and phenol, if exposure to these was present.

HAND INJURY

To the Editor:—Three months ago a woman aged 56 was struck on the dorsal surface of the right hand at the middle of the second metacarpal bone by a piece of glass falling from the seventh floor of a building. She received a small laceration and her hand was swollen for about three weeks. The wound healed by first intention and a small almost invisible scar remains. As a result of the injury the second and third fingers are much smaller than the corresponding fingers of the left hand; they are held slightly flexed and cannot be entirely straightened. Motion is decidedly limited, the patient being unable to close her hand completely. The skin over the fingers is tight and glistening. The fourth and fifth fingers also are involved but to a lesser extent. She complains of numbness over the dorsal surface of her second and third fingers. Her fingers are sensitive to cold. X-ray examination was negative at the time of the accident and a picture taken three weeks ago also was negative. What is the explanation of this change?

M.D., West Virginia.

ANSWER.—There was partial or complete division of the cutaneous branch of the radial nerve, of the common extensor tendons and possibly of the extensor indicis proprius. The scar tissue that formed helps to fix the injured tendons and to prevent complete extension and to restrict flexion. The same scar tissue interferes with the return flow of blood and return flow of lymph along the lymphatic channels and accounts for the poor circulation and sensitiveness to cold.

EFFECT OF SKIN TUBERCULOSIS ON PULMONARY TUBERCULOSIS

To the Editor:—Does the presence of an associated cutaneous tuberculosis influence favorably the prognosis of pulmonary tuberculosis? Kindly list references on this subject.

M.D., New York.

ANSWER.—All observations and reports indicate that cutaneous tuberculosis rarely exists in fatal pulmonary tuberculosis but rather in conjunction with extrapulmonary disease. Wail (Inverse Relation Between Tuberculosis of the Skin and Tuberculosis of the Internal Organs, *Virchows Arch. f. path. Anat.* **277**:115, 1930) and Memmesheimer (Influence of Cutaneous Tuberculosis on Pulmonary Tuberculosis, Skin Clinic, Essen, June 1936), among others, bear this out in their reports. It must not be assumed too hastily, however, that this is due to activity of the skin alone. While the skin seems to have a decided immunizing effect, the peculiarity of the bacilli that localize in the skin or other extrapulmonary organs must also be considered.

There are instances, however, in which bacilli of full virulence and typical behavior have appeared to yield to collateral skin infections. These effects cannot be explained satisfactorily on any other basis than as a result from stimulation of the skin.

Perhaps the most important report on this subject is that of Zinn and Katz (Biologische Einwirkung von der Haut auf den gesunden und tuberculosen Organismus, Tuberculose-Bibliothek, 1927, No. 27), who show that the skin is an organ subject to various stimuli and that definite immunizing properties originate in the skin as a result of chemical, bacterial or light stimuli. They cite the work of Petruschky, Moro, Ponndorf and a host of others in which dead bacillary extracts were injected into the skin for immunization effects.

Kutschera (Therapy of Severe Pulmonary Tuberculosis by Artificial Production of Cutaneous Tuberculosis, *Wien. klin. Wchnschr.* **50**:1547 [Nov. 12] 1937) has recently gone further and applied the principle in the use of living bacilli inoculated into the skin of tuberculous patients. Various protective anti-

bodies have been demonstrated after such inoculations. He recommends this procedure in various forms of slowly progressive secondary type of pulmonary tuberculosis, in which group he has made more than 1,000 inoculations without ill results. Primary tuberculosis inoculations, however, must scrupulously be avoided.

BLEPHAROCHALASIS

To the Editor:—A white man aged 28 complains of a narrowing of his left palpebral fissure. He has been aware of this for at least three years. No pain and no disturbance of vision are associated and there are no headaches. In 1934 the left eye was edematous, mostly in the surrounding tissues. An eyeground examination then revealed a slight hyperemia, which appeared to follow the ingestion of strawberries. In forty-eight hours the edema subsided. In 1932 the patient suffered from a pansinusitis. Treatment consisted of irrigations of the left frontal sinus and both maxillary antrums. There was an uneventful recovery except for a postnasal discharge. At present examination reveals no inflammation of the lids or conjunctiva. The left upper eyelid is slightly edematous. Its edge covers the uppermost portion of the iris. There is a perceptible narrowing of the left palpebral fissure; there are no extra-ocular palsies and the eyegrounds are normal. Visual acuity of the left eye is 20/30 (Snellen), of the right eye 20/20. The serologic reaction is negative; neurologic examination and x-ray examination of all sinuses are negative. What are the possibilities? Will an angioneurotic edema last so long? In 1934 when the acute episode occurred, two ophthalmologists and two nose and throat men concurred in that diagnosis. I have noted several persons with a similar abnormality. The patient has shown me a photograph of himself at the age of 2. There is a suggestion of a slight narrowing of the left palpebral fissure. After loss of sleep the abnormality seems to be accentuated.

M.D., North Carolina.

ANSWER.—Apparently the case described is a condition known as blepharochalasis. This is usually the result of repeated attacks of acute edema of the lids resembling angioneurotic edema, but with a peculiarity of the connective tissue in the lid which leaves a thinned and pendulous upper lid. It is sometimes associated with vasomotor rhinitis during acute attacks. Efforts to trace it to some form of allergy have not been successful. It is necessary in many cases to resect a portion of skin in order to correct the overhanging portion of the lid. Shrinking of the nasal mucous membrane and the use of ice seem to help as much as anything.

PYELITIS AND FEVER

To the Editor:—Would diathermy be efficacious in the treatment of chronic pyelitis in a woman 30 years of age? The urine is usually negative for bacilli. I have been treating her with pyridium (0.2 Gm. daily taken before retiring). She has a fever every day of 99.6 F. between the hours of 11 a. m. and 4 p. m. only. Does the fever at these hours signify anything unusual?

M.D., New York.

ANSWER.—Diathermy is seldom of any value in the treatment of pyelitis. In the case mentioned it would seem important to submit this patient to a thorough urologic investigation in order to rule out the possibility of any obstruction in the urinary tract. If the examination is entirely negative, the use of mandelic acid or sulfanilamide should be highly efficacious in eradicating the existing infection. The occurrence of fever at the hours mentioned does not appear to have any significance.

FACIAL PALSY FROM TRAUMA

To the Editor:—A boy aged 8 fell from a tree 4 feet off the ground and hit his head; he did not lose consciousness and apparently was not hurt; from two to three days later he complained of soreness on the left side of his face and his mother noticed a paralysis on that side. I examined him one week after the fall; there were no symptoms of a fractured skull and x-ray examination shows none. A physical examination discloses a paralysis of the left side of the face; I did not test him with the faradic current. After four weeks there has been no change in his condition and I am interested in finding out whether anything can be done at present to restore function and when a plastic operation should be indicated if the condition fails to improve. I may add that the boy apparently was in perfect health before the accident and has been since it occurred.

M.D., Texas.

ANSWER.—The history suggests fracture of the skull which has injured the facial nerve or direct trauma to the nerve. The muscles of the face should be supported by an adhesive splint attached to the cheek and forehead. The boy should have massage and daily stimulation with the galvanic current as well as exercises in which he attempts to use that side of the face. If there is no return of function in the muscles of the face within three months, an anastomosis of the facial nerve and the hypoglossal and spinal accessory nerves should be considered. In the interim, the muscles of the face must be kept from relaxing and this is best accomplished by a splint.

DIVERTICULITIS OR CARCINOMA

To the Editor:—Can you outline for me or refer me to literature discussing the present status of diverticulitis and diverticulosis particularly with regard to its treatment? A white woman aged 61 came to me several months ago complaining of a loss of 40 pounds (18 Kg.) during the preceding eight months, accompanied by symptoms of weakness, anorexia, nausea and occasional vomiting. With the exception of a hemoglobin of 65 per cent, the blood and urine were normal. Physical examination was essentially negative. A gastrointestinal study disclosed an extensive diverticulitis. Treatment with a milk, cream and egg diet, barium sulfate powder orally and liquid petrolatum have been continued for about one month with little improvement in the anorexia and nausea, her most persistent and distressing symptoms. If she could achieve a normal food intake, her secondary symptoms would probably subside.

HOWARD G. BOSLAND, M.D., Verndale, Minn.

ANSWER.—The history as given suggests the probability of carcinoma. In about one third of the cases of diverticulosis complicated by sigmoiditis there is carcinoma, which is not revealed by an x-ray examination. Hence it may be wise to have surgical consultation. Diverticula of the colon are best handled with a low residue, high vitamin diet, and low olive oil retention enemas containing a small amount of aristol powder. Sufficient liquid petrolatum should be given by mouth to keep up the bowel movements.

References:

Brown, P. W., and Marcley, D. M.: Prognosis of Diverticulosis and Diverticulitis of the Colon, THE JOURNAL, Oct. 23, 1937, p. 1328.
Willard, J. H., and Beckus, H. L.: Clinical and Therapeutic Status of Cases of Colonic Diverticulosis Seen in Office Practice, *Am. J. Digest. Dis. & Nutrition* **3**: 580 (Oct.) 1936.
Drueck, C. J.: Diverticula and Diverticulitis, *Rev. Gastro-Enterol.* **4**: 134 (June) 1937.
Dixon, C. F.; Deuterman, J. L., and Weber, H. M.: Diverticula of Intestine, *Surg., Gynec. & Obst.* **66**: 314 (February, No. 2A) 1938.

GENTIAN VIOLET FOR ORAL LESIONS

To the Editor:—Of what value is gentian violet in lesions of the mouth, such as trench mouth? What is the best strength of solution to use for young children?

J. C. FRYE, M.D., Williamsburg, Pa.

ANSWER.—Gentian violet has been widely used in the treatment of various oral lesions but reports of its efficiency vary greatly. Aqueous solutions of gentian violet are nontoxic and nonirritating and yet can kill or inhibit the growth of many of the gram-positive bacteria of the mouth. Gentian violet is occasionally advocated for the treatment of Vincent's infection (trench mouth). Probably gentian violet would improve general oral hygiene as much as any other mild antiseptic and hence would have some beneficial effect on cases of Vincent's infection. However, oxidizing agents such as hydrogen peroxide and sodium perborate are usually more effective. Gentian violet is probably more valuable in the treatment of thrush and other fungous infections of the mouth. A 0.5 to 1 per cent aqueous solution of gentian violet may be used with safety on young children. A description of gentian violet and related rosaniline derivatives appears in New and Nonofficial Remedies, 1938, pages 218-221.

MACERATION OF FETUS

To the Editor:—What is the shortest time in which the skin of a dead fetus might become macerated? I delivered a stillborn infant at term with a tight knot in the cord. It was so macerated that the skin rubbed off on the slightest touch. Yet the mother thought she had felt life within twenty-four hours of the birth.

H. O. SKINNER, M.D., St. Paul.

ANSWER.—The skin of a dead fetus can macerate in a short time. It is entirely possible to have extensive maceration within a twenty-four hour period. Many factors influence the rate of maceration. Heat and infection are the most common of these factors. In the presence of one or both of these, marked maceration can occur within several hours.

LEGISLATION FOR DESTRUCTION OF RAGWEED

To the Editor:—In Queries and Minor Notes in THE JOURNAL, Oct. 8, 1938, page 1397, is a discussion of legislation concerning the destruction of ragweed. In this connection it is noteworthy that the sanitary code of the city of East Orange, N. J., received an additional amendment Oct. 5, 1933:

"That any thing, condition or act which is or may become a detriment or menace to human health and the following specific things, conditions and acts are, each and all of them, hereby declared to be and are defined as nuisances:

". . . (g) Permitting ragweed in the flowering state to be or to grow upon any public or private property."

Health Officer.

F. J. OSBORNE, East Orange, N. J.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, Jan. 3-5 and June 20-22. Sec., Dr. J. N. Baker, 517 Dexter Ave., Montgomery.

ALASKA: Juneau, March 2. Sec., Dr. W. W. Council, Box 561, Juneau.

ARIZONA: *Basic Science.* Tucson, Dec. 20. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

COLORADO: *Basic Science.* Denver, Dec. 7-8. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver. *Medical.* Denver, Jan. 4-6. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, Feb. 11. Prerequisite to license examination. Address State Board of Healing Arts, 1893 Yale Station, New Haven.

DELAWARE: Dover, July 11-13. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: *Basic Science.* Washington, Dec. 26-27. *Medical.* Washington, Jan. 9-10. Sec., Commission on Licensure, Dr. George C. Ruhland, 201 District Bldg., Washington.

GEORGIA: Atlanta, June. Joint Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, April 4-7. Dir., Bureau of Occupational License, Mr. D. B. Cruikshank, Rm. 351, State Capitol Bldg., Boise.

ILLINOIS: Chicago, Jan. 24-26. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 20-22. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: *Medical.* Des Moines, Dec. 1-3. *Basic Science.* Des Moines, Jan. 10. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

KANSAS: Topeka, Dec. 13-14. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 North 7th St., Kansas City.

KENTUCKY: Louisville, Dec. 6-8. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. Third St., Louisville.

LOUISIANA: New Orleans, Dec. 1-3. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MARYLAND: *Medical (Regular).* Baltimore, Dec. 13-16. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homeopathic).* Baltimore, Dec. 13-14. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MICHIGAN: Ann Arbor and Detroit, June 14-16. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 100 W. Allegan St., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, Jan. 3-4. Sec., Dr. J. Charnley McKinley, 326 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Jan. 17-19. Sec., Dr. Julian F. DuBois, 350 St. Peter St., St. Paul.

MISSISSIPPI: *Reciprocity.* Jackson, December. Asst. Sec., State Board of Health, Dr. B. N. Whitfield, Jackson.

MONTANA: Helena, April 4-5. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEBRASKA: *Basic Science.* Omaha, Jan. 10-11. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW HAMPSHIRE: Concord, March 9-10. Sec., Board of Registration in Medicine, Dr. Fred E. Clow, State House, Concord.

NEW JERSEY: Trenton, June 20-21. Address, Dr. William L. Wilbur, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, April. Sec., Dr. Le Grand Ward, 135 Sena Plaza, Santa Fe.

NEW YORK: Albany, Buffalo, New York and Syracuse, Jan. 23-26. Chief, Bureau of Professional Examinations, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: *Reciprocity.* Raleigh, December. *Examination.* Raleigh, June 19. Sec., Dr. William D. James, The Hamlet Hospital, Hamlet.

NORTH DAKOTA: Grand Forks, Jan. 3-6. Sec., Dr. G. M. Williamson, 4½ S. Third St., Grand Forks.

OHIO: Columbus, Dec. 7-9. Sec., State Medical Board, Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: *Basic Science.* Oklahoma City, Nov. 30. Sec. of State, Hon. Frank C. Carter, State Capitol Bldg., Oklahoma City. *Medical.* Oklahoma City, Dec. 14. Sec., Dr. James D. Osborn Jr., Frederick.

PENNSYLVANIA: Philadelphia, Jan. 3-7. Sec., Board of Medical Education and Licensure, Dr. James A. Newpher, 400 Education Bldg., Harrisburg.

PUERTO RICO: San Juan, March 7. Sec., Dr. O. Costa Mandry, Department of Health, San Juan.

SOUTH DAKOTA: Pierre, Jan. 17-18. Director of Medical Licensure, Dr. B. A. Dyar, State Board of Health, Pierre.

VERMONT: Burlington, Feb. 14. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, Dec. 14-16. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WASHINGTON: *Basic Science.* Seattle, Jan. 5-6. *Medical.* Seattle, Jan. 9-11. Dir., Department of Licenses, Mr. Harry C. Huse, Olympia.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 3. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Madison, Jan. 10-14. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

WYOMING: Cheyenne, Feb. 6. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, Nov. 19, page 1955.

Colorado October Endorsement Report

Dr. Harvey W. Snyder, secretary, Colorado State Board of Medical Examiners, reports twelve applicants licensed by endorsement at the meeting held in Denver, Oct. 4, 1938. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1924)	California,
(1933) Florida, (1938) N. B. M. Ex.			
Northwestern University Medical School		(1933)	Nebraska,
(1936) Illinois			
Rush Medical College		(1922), (1936)	Illinois
State University of Iowa College of Medicine		(1935)	Iowa
Johns Hopkins University School of Medicine		(1912)	Utah
University of Minnesota Medical School		(1924)	Minnesota
Jefferson Medical College of Philadelphia		(1927)	New Jersey
Medical College of Virginia		(1937)	Virginia

Iowa June Examination

Mr. H. W. Grefe, director, Division of Licensure and Registration, reports the written examination held at Iowa City, June 7-9, 1938. The examination covered eight subjects and included 100 questions. An average of 75 per cent was required to pass. Eighty-eight candidates were examined, of whom seventy-eight passed and ten failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine		(1937)	84.4, 88.8
Rush Medical College		(1936) 79.9,	(1937) 91.1
State University of Iowa College of Medicine		(1936)	86.4, (1938)* 78.8, 79.1, 80, 80.1, 80.5, 80.8, 81, 81.5, 81.9, 81.9, 81.9, 82, 82.4, 82.5, 82.5, 82.5, 82.9, 83, 83.1, 83.3, 83.4, 83.5, 83.8, 83.9, 83.9, 84.6, 84.6, 84.8, 84.9, 85.1, 85.1, 85.1, 85.4, 85.8, 86.1, 86.3, 86.3, 86.4, 86.5, 86.6, 86.6, 86.8, 86.9, 86.9, 87, 87, 87, 87, 87.1, 87.3, 87.4, 87.4, 87.5, 87.5, 87.6, 88, 88, 88.1, 88.3, 88.6, 88.6, 89, 89.3, 89.6, 90, 91, 91.1, 91.6, 92.5, 92.6
University of Oregon Medical School		(1936)	88.1
Queen's University Faculty of Medicine		(1936)	82.8

School	FAILED	Year Grad.
State University of Iowa College of Medicine		(1938, 10)

Thirty-three physicians were licensed by reciprocity and three physicians were licensed by endorsement from July 1 through Oct. 1, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School		(1936)	California,
(1925), (1936), (1937) Illinois			
Rush Medical College		(1922)	Illinois
School of Medicine of the Division of Biological Sciences		(1934)	Illinois
University of Illinois College of Medicine		(1931), (1936, 3), (1937), (1938, 2) Illinois	
Indiana University School of Medicine		(1929)	Indiana
University of Kansas School of Medicine		(1936, 2)	Kansas
University of Louisville School of Medicine		(1934)	Kentucky
University of Michigan Medical School		(1927)	Michigan
University of Minnesota Medical School		(1935, 2), (1937, 2)	Minnesota
Washington University School of Medicine		(1937)	Missouri
Creighton University School of Medicine		(1932), (1936)	Nebraska
Univ. of Nebraska College of Medicine		(1936), (1937, 3)	Nebraska
Temple University School of Medicine		(1936)	New York
McGill University Faculty of Medicine		(1933)	Minnesota
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin		(1933)	New York
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau		(1934)	New York

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists		(1938)	N. B. M. Ex.
Harvard University Medical School		(1933)	N. B. M. Ex.
Temple University School of Medicine		(1935)	N. B. M. Ex.

* Licenses withheld pending completion of internship.

California Reciprocity and Endorsement Report

Dr. Charles B. Pinkham, secretary, California State Board of Medical Examiners, reports fifty-one physicians licensed by reciprocity and twelve physicians licensed by endorsement from May 11 through Sept. 29, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
George Washington University School of Medicine		(1936)	Illinois
University of Georgia School of Medicine		(1937)	Georgia
College of Physicians and Surgeons of Chicago		(1910) (1912) South Dakota	Illinois,
Rush Medical College		(1912)	Illinois
University of Illinois College of Medicine		(1936)	Illinois
State University of Iowa College of Medicine		(1911) (1930) Utah	Iowa,
University of Kansas School of Medicine		(1935)	Kansas
University of Louisville School of Medicine		(1934)	Kentucky
Harvard University Medical School		(1925)	Minnesota
Tufts College Medical School		(1926)	Mass.
University of Michigan Medical School		(1928), (1930)	Michigan
University of Minnesota Medical School		(1928)	Montana
Kansas City Medical College, Missouri		(1897)	Idaho
St. Louis University School of Medicine		(1933), (1934, 2)	Missouri
Washington University School of Medicine		(1928) (1935) Missouri	Oregon,
Creighton University School of Medicine		(1937)	Kansas
John A. Creighton Medical College		(1902)	Illinois
University of Nebraska College of Medicine		(1928)	Hawaii,
(1931) New York, (1908), (1917), (1932, 2), (1934, 2), (1937, 2) Nebraska			
Columbia Univ. College of Physicians and Surgeons		(1928)	New York
Rush Medical College		(1922), (1936)	Illinois
State University of Iowa College of Medicine		(1935)	Iowa
Johns Hopkins University School of Medicine		(1912)	Utah
University of Minnesota Medical School		(1924)	Minnesota
Jefferson Medical College of Philadelphia		(1927)	New Jersey
Medical College of Virginia		(1937)	Virginia

Eclectic Medical College of the City of New York	(1901)	New York
New York University, University and Bellevue Hospital Medical College	(1917), (1928)	New York
University of Buffalo School of Medicine	(1900)	New York
University of Rochester School of Medicine	(1934)	New York
University of Cincinnati College of Medicine	(1938)	Ohio
Western Reserve University School of Med.	(1936), (1937)	Ohio
University of Oregon Medical School	(1936)	Oregon
Jefferson Medical College of Philadelphia	(1909)	Minnesota, (1924) Pennsylvania, (1934) Ohio
University of Pennsylvania, School of Medicine	(1924)	New York
Woman's Medical College of Pennsylvania	(1915)	New York
University of Vermont College of Medicine	(1923)	Vermont
University of Virginia Department of Medicine	(1932)	Virginia
University of St. Andrews Conjoint Medical School, Scotland	(1934)	New York

LICENSED BY ENDORSEMENT

School	Year Grad.	Endorsement of
College of Medical Evangelists	(1936)	N. B. M. Ex.
University of Colorado School of Medicine	(1931)	U. S. Navy
Tulane University of Louisiana School of Medicine	(1931)	N. B. M. Ex.
Harvard University Medical School	(1934)	N. B. M. Ex.
St. Louis University School of Medicine	(1930), (1933)	N. B. M. Ex.
New York University, University and Bellevue Hospital Medical College	(1927)	N. B. M. Ex.
University of Rochester School of Medicine	(1933)	N. B. M. Ex.
Duke University School of Medicine	(1934, 2)	N. B. M. Ex.
University of Oregon Medical School	(1929)	N. B. M. Ex.
University of Pennsylvania Department of Medicine	(1898)	U. S. Army

Book Notices

Experience in the Management of Fractures and Dislocations (Based on an Analysis of 4,390 Cases). By the Staff of the Fracture Service, Massachusetts General Hospital, Boston. Under the General Editorship of Philip D. Wilson, M.D., Surgeon-in-Chief, Hospital for Ruptured and Crippled, New York. Cloth. Price, $15. Pp. 1,036, with 1,419 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company, 1938.

The staff of the Fracture Service of the Massachusetts General Hospital in Boston presents in this book a study of 3,985 patients who suffered 4,390 fractures and dislocations. Of this number they obtained end result examinations, a year or more after injury, in 1,192 cases. Their unusual presentation includes summaries of the history, examination, treatment and final examinations for each one of these end result cases, and also, for most of them, tracings of the early to late x-ray films. The twenty-three collaborators summarize the injuries in the various regions of the body. Following the introduction is the chapter on fractures and dislocations of the phalanges and metacarpals, which includes forty-five brief case histories outlining the associated injuries, treatment, complications and end results, and adjacent to this summary are sketches of the x-ray films in practically all the cases. Then follows the chapter on fractures and dislocations of the carpal bones by another member of the staff, with a brief introductory discussion of the anatomic considerations and a general consideration of the material studied. This chapter is concluded by summaries of twenty-six case histories, mostly accompanied by the pictures in each case. That is the general plan of presentation, which continues through the book. Chapter XVII is entitled "Fractures of the Facial Bones"; chapter XV, "Fractures and Dislocations of the Cervical Spine"; chapter XI, "Dislocation of the Shoulder Girdle"; chapter XIX, "Fractures of the Pelvis"; chapter XXII, "Ankle Fractures"; chapter XXXI, "Pathologic Fractures"; chapter XXXIII, "Delayed and Nonunion," and so on. The summaries of case reports are set in different type from the text. They begin with case report 1 in chapter II and end with case report 1396 in chapter XXXI.

This presentation differs from other treatises on fractures in that it is based on the actual study of cases and the analysis of the results of treatment. The authors have not gleaned all the information that may be obtained from analysis of these cases, and this large amount of source material is placed at the disposition of any student who cares to search further in the desire that every worthwhile conclusion may be drawn.

With the toll of injured victims ever increasing, physicians are confronted daily with problems on the correct solutions of which depend human lives. Conscious of such responsibility, practitioners are attending graduate fracture courses in ever increasing numbers.

The staff of the Fracture Service of the Massachusetts General Hospital for many years has conducted annually a graduate course on fractures. This book is the outgrowth of their teaching. The authors of the various chapters are those who have taught in these courses in the field in which they were particularly competent. They are conscious of defects in this presentation, but the sincerity of their figures cannot be questioned. They have reported fully the unsatisfactory results along with the good results. Some of the bad results, however, were inevitable from the nature of the injury, and some of them were due to errors of judgment or mistakes in technic. The authors hope that this presentation may challenge others to present similarly their material. When a large body of facts representing results of treatment by all the different methods are available for study, progress will follow.

A Handbook of Methods for the Study of Adolescent Children. By William Walter Greulich, Ph.D., Harry G. Day, Sc.D., Sandor E. Lachman, M.D., John B. Wolfe, Ph.D., and Frank K. Shuttleworth, Ph.D. Monographs of the Society for Research in Child Development, Volume III, No. 2 (Serial No. 15). Paper. Price, $2.25. Pp. 406, with 30 illustrations and diagrams. Washington, D. C.: Society for Research in Child Development, National Research Council, 1938.

The Adolescent Period: A Graphic and Pictorial Atlas. By Frank K. Shuttleworth, Institute of Human Relations, Yale University, New Haven, Conn. Monographs of the Society for Research in Child Development, Volume III, No. 3 (Serial No. 16). Paper. Price, $2. Pp. 246, with 450 illustrations and graphs. Washington, D. C.: Society for Research in Child Development, National Research Council, 1938.

The handbook and atlas have been prepared by a group of scientists who, over an appreciable period, have jointly reviewed critically and examined the literature on adolescence. Lawrence K. Frank, in an introduction, explains that the handbook is intended to be a methodological aid for students of child growth and development, particularly of the adolescent period. The several authors have covered the particular fields of their specialized interest. The material is organized in five parts, anatomic studies, biochemical and physiologic researches, medical and clinical aspects of adolescence, psychologic investigations, and a section on problems not involving direct measurements of children. The effort has been "to select from the literature those methods, technics and procedures which might be employed to record and, if possible, measure the growing child, in order to reveal the rate and direction of growth and development, or the developmental sequence, of the various structures, functions and activities that are being observed" (xv).

In the section on anthropometry, Dr. Gruelich characterizes serial photography as the most valuable single technic for recording externally discernible bodily changes associated with growth and development. The general physical characteristics and changes associated with puberty are outlined extensively. The section on biochemical and physiologic aspects exhaustively covers the literature of the physiology of the skin, blood chemistry, respiration and energy metabolism, digestive organs, urine and feces. The extensive psychologic section comprehensively covers the literature on sensory and motor phenomena, intellectual and educational achievement and special abilities. The literature on sexual behavior is briefly and critically commented on to the effect that "but little in the way of established facts or well tried methods of obtaining facts" on adolescent sexual behavior is to be found. Much more exhaustive review of tests and observations of personal and social reactions is given. A final section presents literature on measurable aspects of the environment, discusses the logic of the approaches to the heredity-environment problem, and concludes with a discussion of statistical considerations.

The separate monograph, the atlas by Dr. Shuttleworth, consists of illustrations presenting data concerning adolescents and adolescent growth. They include graphs, charts, diagrams, photographs and all manner of data suitable for graphic or pictorial presentation. Material has been presented from the many aspects from which the adolescent is studied, physical growth and development, sexual maturation, health statistics, intellectual development, problems of behavior and occupational and sexual adjustments.

These two related works constitute a monumental achievement in selection and (in the handbook) of critical discussion of contributions from a vast and often confusing literature, which they now bring within relatively easy reach of the student or research worker. As a reference resource they amply justify the enormous labor they represent. As the authors have set out to do, they indicate what structures, functions and

activities of the growing child can and have been measured, and they aid the worker in making reliable measurements of his own.

Despite its bigness, the handbook omits the neurologic, psychiatric and endocrinologic literature of adolescence, which omission, the authors explain, is due to limitations of time and personnel. From the standpoint of the medical research worker in adolescence this is a disappointing omission, and the authors' hope that others will be inspired to make up for this lack will be shared by medical workers. One cannot lightly dismiss, however, the almost cursory manner in which some relatively subjective methods of studying behavior are dismissed in chapter XXI. These include observation, personal report (interviews, psychoanalysis, case study) as discussed in the chapter on sexual behavior. These methods should be critically regarded as methods of study of behavior in general, sexual or otherwise. The possibilities of these methods are sufficiently great that serious students of behavior should not content themselves with the easy evasion "as the procedure (psychoanalysis) now stands, however, it appears to be too subjective to be classified as a scientific approach." The authors make tentative suggestions as to the possible "scientific" utilization of these methods. They persist in the curious attitude that methods which gain information about the mental life of the disturbed individual might not be useful in gaining information about the normal adolescent. According to this logic, study of an individual suffering with an infection might not be expected to throw light on the maintaining of immunity from disease by the normal individual who shows no sign of infection. Not infrequently it requires the observation of individuals presenting exaggerated reaction to undue stress (whether physical or psychologic) to suggest the reactive potentialities and the laws governing these for the normal individual. Observation, whether of individuals in health or in disease, may lead to the clues necessary to set up properly controlled conditions for scientific investigation. (See D. M. Levy, Studies in Sibling Rivalry, American Orthopsychiatric Association, 1937, as an attempt in this direction.)

One would judge that after their experience in sifting such an immense literature the authors might be in a position to influence somewhat the direction of experimentation and observation that may tend toward a clearer conception of the adolescent, who still seems lost in the woods. If so, this may be reflected in the literature on adolescence of the next few years. Workers in the field of child development who will trouble to make proper use of these two publications will gain much profit for their pains.

Some Account of the Pennsylvania Hospital from Its First Rise to the Beginning of the Year 1938. By Francis R. Packard, M.D. Boards. Price, $2.50. Pp. 133, with 44 illustrations. Philadelphia: Pennsylvania Hospital, 1938.

Firsts in various fields, whether books or buildings, are interesting. It is also important for American men of medicine to know something about the first hospital in the United States. This brief work by Packard, who is exceptionally well qualified as a medical historian, is full of important items. Benjamin Franklin while a member of the board of the Pennsylvania Hospital prepared and printed in his own printing plant a history of the hospital. To add to its historic value, "in the making of the present volume the printers have followed in general the size, format and typography of the earlier work." The Pennsylvania Hospital was founded in 1751. To quote from chapter II of Dr. Packard's work, "one of the objections made to the foundation of the hospital, when the matter was first brought up in the assembly, had been the expense that would be incurred in securing the services of physicians and surgeons for its staff. This was obviated when Drs. Lloyd Zachary, Thomas Bond and his brother, Phineas Bond, offered not only to serve the hospital for three years without compensation but also to supply all the medicines for that time at their own expense." What a fine commentary this is on the character of those men, and how timely it is to call attention to the fact that the medical profession at all times has served the best interests of humanity. The development of many departments and innovations is mentioned. Among these were the laboratory, first used as a place to prepare drugs for the hospital. Then a sunstroke tent was erected, consisting of a large canvas pavilion, as a temporary but useful annex to the hospital, which served for some years and in which Dr. James J. Levick introduced the so-called ice treatment for sunstroke. Although the Pennsylvania Hospital was founded largely by the Quakers and their influence, nevertheless it is "the only hospital in this country that has cared for sick or wounded soldiers in all the wars which have occurred on its soil." The staff of the hospital was a most distinguished one and the "high standard set by the original staff was well maintained in subsequent years." According to the author it was in the operating room of the Pennsylvania Hospital that the first thoracoplasty in a case of pulmonary tuberculosis was performed Nov. 13, 1911, by Dr. R. G. Le Conte. This brief work is embellished with a goodly number of interesting illustrations and presents at its close an iconography listing the various authorized engravings of the hospital. Dr. Packard's charming style makes this a delightful production from a literary standpoint. It is also most valuable as a historical document, one which lovers of medicine and those interested in its development in Philadelphia should read and thereby be both instructed and edified.

Medicina legal y criminología afrocubanas. Por Israel Castellanos, director del Gabinete nacional de identificación de la República de Cuba. Paper. Pp. 152, with 26 illustrations. Havana: Molina y Cía, Impresores, 1937.

The study of medicolegal problems involved in medicine as practiced by the Cuban-African Negro witch doctor is of considerable sociologic interest and importance. The native physician sorcerers have, in their own circle, the right to kill as well as the right to cure. These sorcerers, called ñinigos and Brujos, have often been referred to as criminals and yet in their social structure they are the omnipotent guardians of their race. Perhaps the most comprehensive study of the customs of these sorcerers is the book by Fernando Ortiz. The volume by Castellanos is not nearly as complete as the one by Ortiz but does give an insight into the medicolegal aspect of this problem, which is far from being solved.

The Principles and Practice of Obstetrics. By Joseph B. DeLee, A.M., M.D., Consultant in Obstetrics, Chicago Lying-in Hospital and Dispensary, Chicago. Seventh edition. Cloth. Price, $12. Pp. 1,211, with 1,277 illustrations. Philadelphia & London: W. B. Saunders Company, 1938.

This book has now been before the profession for twenty-five years. It still reflects the teachings of the well known author at Northwestern University Medical School and at the University of Chicago. The obstetric technic described is the result of his experience of forty-four years in many hospitals, in a large maternity outdepartment, and in private and consulting practice in many homes. He has carefully worked over this new edition, adding much new material and omitting some obsolete material. The book remains virtually the same size as the preceding edition. Rapid developments in the physiology of menstruation and in the blood chemistry of the toxemias of pregnancy made necessary considerable revision of those sections in which work the author was assisted by Profs. M. E. Davis, W. J. Dieckmann and G. M. Dack of the University of Chicago. Dr. De Lee believes that lack of knowledge of the natural phenomena in labor is responsible for much of the present high maternal and fetal mortality. He has given therefore special attention to the mechanism of labor, incorporating the great contributions made by Caldwell, Moloy and D'Esopo, Rudolph and Ivy, and de Snoo. The chapter on obstetric anesthesia and analgesia has been enlarged. While nature intended labor to be a simple and harmless function, the softening influences of modern life, the author believes, have something to do with the present day suffering during childbirth. Nevertheless, the author has seen three painless labors and many others in which the pains were easily bearable, until at the very finish a few whiffs of ether completed a satisfactory delivery. The pain of labor, he believes, has been much exaggerated and attempts to get rid of all of it have been dangerous. In this chapter he discusses various anesthetics that have been used to relieve the pain of labor.

The chapter on contracted pelvis may seem long to those practitioners who do not make pelvic measurements or an antepartum study of the probable mechanism of labor. There is

much to learn about contracted pelvis and nature's method of overcoming mechanical difficulties. The developments in the endocrine or vitamin fields which appear to have been proved useful, the developments in internal medicine and surgery in their relation to pregnancy and tuberculosis, heart disease, diabetes and the anemias, have been incorporated as well as the treatment of puerperal sepsis by means of sulfanilamide and the new scalp traction forceps in placenta praevia. The author has kept the text representative of the obstetric thought of the day and his book remains preeminent in this field.

Les méningo-neurobrucelloses. Par Henri Roger et Yves Poursines. Paper. Price, 45 francs. Pp. 248. Paris: Masson & Cie, 1938.

Until recently, scant attention has been paid to the influence of brucellosis (undulant fever) on the central or peripheral nervous system. While scattered reports have appeared in American medical literature describing cases of meningitis or encephalitis due to Brucella infection, the attention of American physicians has not been directed particularly toward the frequency of those complications of brucellosis which affect the nervous system. Especially during the past decade, many reports have appeared in European literature, particularly in French journals, dealing with the neurobrucelloses. Roger and Poursines have brought together a combined account of their own researches and the published observations of other workers. The result is a masterly dissertation which deals concisely and clearly with an undoubtedly common, but infrequently recognized, phase of brucellosis. The predilection for meningeal localization, frequently associated with involvement of other parts of the nervous system, caused Roger and Poursines to select the descriptive name "meningoneurobrucellosis." The authors provide convincing evidence that the role of the meningitis predominates and that other nervous system involvement is usually secondary to the meningitis. Emphasis is placed on the long interval, often months or years, which may intervene between the acute phase of brucellosis and the delayed manifestations of neuromeningeal complications. The clinical manifestations vary greatly, depending on the extent of meningeal involvement and the presence of additional complications involving the brain, spinal cord or peripheral nerves. Not infrequently the symptoms simulate those of tuberculous meningitis, cerebrospinal syphilis or spinal cord tumor. The diagnostic, prognostic and therapeutic considerations are discussed in an adequate manner. This book should serve a useful purpose in stimulating physicians, particularly neurologists, to consider brucellosis as a not infrequent etiologic factor in many varieties of disease of the nervous system.

The Rheumatic Diseases: A Course of Lectures Arranged by the Medical Staff of the St. John Clinic and Institute of Physical Medicine. Edited by Sir Leonard Hill, M.B., LL.D., F.R.S., Director of Research, St. John Clinic and Institute of Physical Medicine, and Philip Ellman, M.D., M.R.C.P., Physician to St. John Clinic and Institute of Physical Medicine, London. With a foreword by Sir Arthur MacNalty, K.C.B., M.D., F.R.C.P., Chief Medical Officer to the Ministry of Health. Cloth. Price, 84. Pp. 270, with 46 illustrations. Baltimore: William Wood & Company, 1938.

The editors of this book have assembled a course of lectures on rheumatic disease which had been given by members of the staff of the St. John Clinic and Institute of Physical Medicine and authorities from elsewhere during the winter and spring of 1936-1937. There are fifteen contributors and the result is a volume which, while lacking in integration and in the careful editing of some chapters, furnishes a number of thought provoking views. The chapter by R. Fortescue Fox is especially stimulating. His emphasis on the individual nature rather than the purely statistical position of the man of 35 or the young housewife with children faced with a life of progressive crippling deserves constant repetition. Furthermore, his discussion of the known incidence and economic cost of rheumatic disorders in several European countries throws into sharp contrast the almost complete lack of accurate information available in the United States. Fox's discussion also illustrates the greater extent of facilities for the care of chronic arthritis is some European countries, especially Sweden, which nearly twenty years ago erected three sanatoriums for physical, mental and occupational treatment. There is some difference of opinion expressed by the various authors, as was in fact intended, the "unitary theory" of rheumatic fever and rheumatoid arthritis being supported by Sir William Wilcox and others, while Professor Leonard Findlay contends that the evidence in favor of the "unitary theory" is unconvincing. In the chapter by Koerner and Poulton, "Antistreptolysins and Blood Uric Acid in the Chronic Rheumatic Diseases," some original work is reported. Among other conclusions they found that the value of prontosil and prontosil album in rheumatoid arthritis is doubtful except perhaps in the more acute cases. Five chapters are devoted to problems of physical medicine in relation to rheumatic disease. The lecture by H. J. Taylor on the physical basis of physical medicine should serve as a worthwhile introduction to the subject especially for those whose memory of physics has faded. While there may be some difference of opinion with regard to the indications and effectiveness of the various types of physical therapy, these chapters are valuable in expressing the views of experienced workers.

Aids to Histology. By Alexander Goodall, M.D., F.R.C.P., Lecturer on Physiology, School of Medicine of the Royal Colleges, Edinburgh. Fourth edition. Cloth. Price, $1.25. Pp. 151, with 26 illustrations. Baltimore: William Wood & Company, 1938.

This pocket-sized volume is an attempt to present the essential facts of histology in brief form. The author believes that the apparent complexity of histologic structure with the large number of technical terms bewilders the beginner and that a short guide may be of more service to junior students than lengthy descriptions. The book begins with a definition of histology, which word comes from histos, meaning a web. Brief discussions follow on the cell, mitosis and the ovum. Following is a five page chapter on epithelium. The next chapter takes up the connective tissues, the reticulo-endothelial system and the different kinds of cartilage. There is a three page chapter on muscle, and there are numerous brief chapters on various other systems. The nervous system is treated more fully. There are not many illustrations. This volume no doubt would aid in simplifying the extended discussions found in textbooks on histology. The book has gone into four editions since 1911.

What's Wrong With Me? By H. Ameroy Hartwell, M.D. Cloth. Price, $1. Pp. 246. Weehawken, N. J.: The Author, 1938.

This book must be regarded as fundamentally unjustifiable and in violation of one of the most important established truths relating to health. It consists of a series of semitabular statements of symptoms, from which the patient is supposed to make his own tentative diagnosis, then go to a doctor for verification by the objective physical signs, and to seek the physician for treatment. The list of diseases dealt with starts with "abortion" and goes on through the alphabet to "yellow fever." It includes such serious conditions as acute appendicitis, acute Bright's disease and acute gastritis; these, incidentally, alphabetized under "acute." The book can be of little service to the layman and may result in raising needless alarms and contributing to the development of neuroses, unfounded fears, delay in correct diagnosis and treatment or hypochondriasis.

Die Diffusionsanalyse am Blutplasmagel: Ein neuer Weg der Blutforschung. Von Rudolf Bucher. Paper. Price, 30 Swiss francs. Pp. 123, with 70 illustrations. Basel: Benno Schwabe & Co., 1937.

This is a highly technical monograph describing original experiments applying the Liesegang ring phenomena to blood plasma. The author claims to have found certain specific differences in plasma from various species. He observed a characteristic pattern shift with age in all species, and certain changes in disease. These phenomena are apparently independent of total prosein concentration. Their interpretation is obscure. The characteristic patterns are illustrated by excellent color plates.

Materia Medica, Drug Administration and Prescription Writing. By Oscar W. Bethea, M.D., Ph.G., Ph.M., Professor of Clinical Medicine, Tulane School of Medicine, New Orleans, La. Fifth edition. Cloth. Price, $5. Pp. 577. Philadelphia: F. A. Davis Company, 1938.

In this book, which long ago established a place for itself, the reader finds a compendium of the drugs of the U. S. Pharmacopeia XI and the National Formulary VI, together with an excellent treatise on prescription writing. Not only are the drugs described but there are also historical sketches of many of the more important ones, and numerous prescriptions (properly credited to the standard works on therapeutics from

which they are drawn) are offered to illustrate the chief methods of their employment. The revision for the fifth edition has apparently been thorough and will certainly justify for the book a continued occupancy of one of the leading places in this text-book field.

Attaining Manhood: A Doctor Talks to Boys About Sex. By George W. Corner, M.D., Professor of Anatomy, the University of Rochester, Rochester, N. Y. Cloth. Price, $1.25. Pp. 65, with 15 illustrations. New York & London: Harper & Brothers, 1938.

This is an excellent brief discussion of sex for adolescent boys. It avoids sensationalism and gives all the necessary information in condensed form. The diagrams of the sex organs of both the male and the female are exceptionally clear. The book is characterized by a strikingly unemotional style. Its brevity also commends it. The physician who seeks a book to recommend for growing boys, either his own or those of his patients, will make no mistake in choosing this one.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Refusal to Undergo Third Operation for Hernia.—Lindley, in the course of his employment, sustained an injury which resulted in double inguinal hernias. He submitted to two successive operations to correct the hernia on his left side but both operations proved unsuccessful. He then refused to submit either to a further operation to repair the condition on his left side or to an operation for the hernia on his right side. In proceedings instituted under the Oklahoma workmen's compensation act he was awarded compensation for permanent total disability and the employer appealed to the Supreme Court of Oklahoma.

Lindley's disability seemed to be due solely to his left inguinal hernia. The medical testimony on his behalf was to the effect that, because of his condition and the scar tissue which had formed as a result of the previous operations, further surgery was contraindicated and would be attended with more than usual danger and risk to health and life. While the employer's medical testimony tended to minimize the danger incident to a third operation, all the medical testimony was in substantial agreement that the presence of scar tissue would make the success of a further operation more problematic than it would otherwise be; that Lindley's disability would be permanent unless relieved by an operation; and that so long as the condition was unrelieved the performance of heavy manual labor would constitute a constant threat to health and life. While, said the court, no award can be made for permanent disability for hernia until the workman has submitted to an operation to correct the condition, a workman who has undergone such an operation and has received no relief therefrom is not thereafter required to submit to further operations on the chance that they may prove successful. This rule was announced in *United Service Street Car Co.* v. *McCarter*, 167 Okla. 433, 30 P. (2d) 456, in the following language:

> An injured workman who is permanently and totally disabled by reason of a recurring hernia, and who has undergone one unsuccessful operation, is not required to subject himself to another operation which would be dangerous and probably useless, in order to minimize the financial burden imposed by law on his employer or his employer's insurance carrier.

The employer contended, furthermore, that Lindley had not sustained a permanent total disability as a result of the hernias, because the evidence showed that he actually performed work of substantially the same kind and character after his injury as he had performed prior thereto. With respect to this contention, Lindley testified that he had continued his work as a matter of necessity to provide for himself and for his wife and children. Ordinarily, said the Supreme Court, a disability cannot be classified as total under the workmen's compensation act where the earning power of the workman is not wholly destroyed and capacity to perform remunerative employment remains. Excluded from this rule, however, are those cases in which the capacity of the workman is confined to the performance of work of a slight or trivial nature and those cases in which the capacity to do ordinary manual labor remains, as in the present case, but can be exercised only at the cost of serious discomfort and pain on the part of the workman. Sometimes men are impelled by stark necessity or a strong sense of duty and obligation to labor and to seek to carry on long after the human machine has been so broken and destroyed as to seem to make it impossible to drive it further. The wisdom of the effort and the struggle under such conditions may be questioned but the gallantry of the action should not be penalized. The evidence before the commission showed that Lindley had carried on under the urge of necessity and that in so doing he had risked both his health and his life and that the disability under which he was laboring would probably be permanent. Under such circumstances, said the Supreme Court, the commission was justified in finding that Lindley had sustained a permanent total disability as a result of his industrial injury. The court accordingly affirmed the award of compensation.—*Dierks Lumber & Coal Co. v. Lindley (Okla.), 77 P. (2d) 44.*

Workmen's Compensation Acts: Lead Poisoning as a Compensable Injury.—Burden worked in an automobile assembly line near other workers who were grinding down rough spots on metal automobile bodies which had been treated with a lead compound. The air in this part of the plant was impregnated with lead dust and fine metal filings. On March 10, 1936, another worker, in using a compressed air hose, unexpectedly blew a cloud of lead dust into Burden's eyes, nose and mouth. About a week later he began to suffer from headaches, pains about his body, and cramps in his joints; his gums became tender and painful; urination was frequent and painful; and he suffered from nervousness and sleeplessness. As a result he was forced to quit work April 3, 1936. In May his condition was diagnosed as lead poisoning. He applied for and was granted compensation under the Texas workmen's compensation act and his employer's insurer filed an action in the appropriate federal district court to vacate the industrial board's award. From an adverse judgment by the district court, the insurer appealed to the United States circuit court of appeals, fifth circuit.

The insurer contended that Burden's condition was the result of an occupational disease and hence not compensable under the Texas act. Clearly, said the circuit court of appeals, Burden was disabled from lead poisoning. If this were solely the result of a gradual absorption of lead dust as a natural and ordinary hazard of his employment, it would not be compensable. There was evidence, however, of an unexpected, unintended and forcible blowing of an unusually large quantity of lead dust into Burden's face, nostrils and mouth about March 10, 1936, from which it may be found that he then accidentally inhaled an abnormal quantity. There was medical testimony to the effect that the gradual absorption of lead over a period of years would render a person less tolerant to lead than normally, and consequently more susceptible to a massive dose suddenly received; that "the amount of lead he had absorbed over the course of several years would be deposited into the bones and tissues, and probably would not have given any distress, unless he had a large dose to cause acute symptoms"; and that, if he had not had this lead in his system by this constant everyday absorption over four years of time, a massive dose would have caused a disability at the time anyway. The evidence was ample, in the opinion of the court, to support a finding of a compensable industrial injury.

The failure of Burden, in violation of a rule of employment, to wear a respirator which was provided for him and which presumably would have prevented his inhaling the lead dust did not defeat his claim for compensation, continued the court. When a workman is injured while doing something he is not employed to do—an act which is itself outside the scope of his employment—such injury is generally held not compensable because not suffered in the course of employment. Where, however, as here, the workman merely violates a rule relating only to the manner and method of doing his own work, such a violation does not defeat his right to compensation.

The award of compensation in favor of the workman was accordingly affirmed.—*Travelers Ins. Co. v. Burden, 94 F. (2d) 880.*

Society Proceedings

COMING MEETINGS

American Academy of Orthopedic Surgeons, Memphis, Tenn., Jan. 15-19. Dr. Carl E. Badgley, 1313 East Ann St., Ann Arbor, Mich., Secretary.
American Association for the Study of Neoplastic Diseases, Baltimore, Dec. 28-30. Dr. Eugene R. Whitmore, 2139 Wyoming Avenue N.W., Washington, D. C., Secretary.
American Student Health Association, New York, Dec. 29-30. Dr. Ruth E. Boynton, Students Health Service, University of Minnesota, Minneapolis, Secretary.
Eastern Section, American Laryngological, Rhinological and Otological Society, Boston, Jan. 11. Dr. Frank E. Kittredge, Masonic Temple, Nashua, N. H., Chairman.
Middle Section, American Laryngological, Rhinological and Otological Society, Sioux City, Iowa, Jan. 19-20. T. R. Gittins, Davidson Bldg., Sioux City, Iowa, Chairman.
Pacific Coast Society of Obstetrics and Gynecology, Los Angeles, Nov. 30-Dec. 1. Dr. T. Floyd Bell, 400 29th St., Oakland, Calif., Secretary.
Radiological Society of North America, Pittsburgh, Nov. 28-Dec. 2. Dr. Donald S. Childs, 607 Medical Arts Bldg., Syracuse, N. Y., Secretary.
Society for the Study of Asthma and Allied Conditions, New York, Dec. 3. Dr. W. C. Spain, 116 East 53d St., New York, Secretary.
Southern Section, American Laryngological, Rhinological and Otological Society, New Orleans, Jan. 14. Dr. Francis E. LeJeune, Maison Blanche, New Orleans, Chairman.
Southern Surgical Association, White Sulphur Springs, W. Va., Dec. 6-8. Dr. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.
Western Surgical Association, Omaha, Dec. 2-3. Dr. Albert H. Montgomery, 122 South Michigan Blvd., Chicago, Secretary.

THE AMERICAN RHEUMATISM ASSOCIATION

Fifth Annual Meeting and Seventh Conference on Rheumatic Diseases, held in San Francisco, June 13, 1938

LORING T. SWAIM, M.D., Boston, Secretary

(Continued from page 1962)

Immunologic and Bacteriologic Observations in Experimental Streptococcic Arthritis

DRS. D. MURRAY ANGEVINE, RUSSELL L. CECIL and SIDNEY ROTHBARD, New York: During a study of infectious arthritis in rabbits it was found that a small amount (from 0.1 to 2 cc.) of a broth culture of hemolytic streptococcus (AB 13) when injected intravenously produced arthritis in 87 per cent of fifty-four animals. The sedimentation rate was increased and streptococcic agglutinins were demonstrated in those animals which developed arthritis as well as in those which failed to do so. Cutaneous tests were done frequently, and only about 50 per cent of the rabbits developed sensitivity to streptococcus filtrate. Experiments were performed to determine whether there were any differences in the arthritis in normal and in immunized rabbits. Two groups of ten rabbits each received repeated injections of heat-killed organisms. One group was injected intradermally and the other intravenously. The intradermally immunized group became highly sensitive and the intravenously immunized group only slightly sensitive to intradermal injections of streptococcus filtrate. The immunized animals together with a group of normal rabbits were injected intravenously with 2 cc. of a broth culture of hemolytic streptococci. There were no conspicuous differences in the time of onset, the number of joints involved, the severity or the microscopic picture of the arthritis that developed in the three groups of animals. This experiment was repeated, but the rabbits were infected with multiple and varying doses. The first dose was 0.1 cc. of culture injected intravenously; ten days later 1 cc. was given and ten days after this 2 cc. Five of the nine intravenously immunized rabbits developed arthritis after the first infecting dose of 0.1 cc., whereas only one of eight intradermally immunized rabbits and two of eleven controls developed arthritis. Considerably less arthritis was found in this group at the time of necropsy than in the normal and intradermally immunized rabbits. This experiment indicates that although intravenous immunization caused a slight increase in susceptibility to arthritis there was also some protection against the development of arthritis.

DISCUSSION

DR. M. HENRY DAWSON, New York: These experiments clearly show that it is possible to produce a nonsuppurative arthritis in rabbits by the intravenous injection of small doses of hemolytic streptococci. The authors have shown that it is possible to produce lesions which pathologically resemble closely those found in rheumatoid arthritis. However, the disease which they have experimentally produced differs in certain essential respects from the naturally occurring disease and no claims whatever are made that they have reproduced rheumatoid arthritis. There are two points in which the experimental disease differs from the naturally occurring one: In the experimental disease both the agglutinins and the sedimentation rate quickly return to normal. In rheumatoid arthritis the agglutinins persist throughout the disease and the sedimentation rate returns to normal only when the process becomes quiescent. Two other points are worthy of comment. The first is that normal rabbits, immune rabbits and hypersensitive rabbits were all found to respond in essentially the same manner. This is an important observation and should cause much concern to those who believe in allergic theories as well as those who believe in the value of vaccine therapy. The second point concerns the similarity in the agglutination results in the experimentally infected rabbits and in the natural disease rheumatoid arthritis. For many years I have been deeply interested in the capacity of rheumatoid arthritis serums to agglutinate hemolytic streptococci of group A. However, I have always been a little disturbed by the fact that this property is present in only about 70 per cent of cases. From the results reported today it would appear that agglutinins are similarly present in only 70 or 80 per cent of infected animals. It may well be that the failure of the remainder to respond may be associated with the feeble antigenic properties possessed by group A organisms.

DR. J. ALBERT KEY, St. Louis: I believe that in the beginning these streptococcic joints were purulent, but they are undoubtedly the nearest approach to experimental rheumatoid arthritis that I have seen. I have seen acute streptococcic joints in patients which quiet down and produce a chronic progressive arthritis. Usually, however, this is of a destructive character. In my experience, once the acute stage of the experimental infection was over there were no further involved joints. This is one of the distinguishing features between rheumatoid arthritis and experimental streptococcic arthritis. In my experimental arthritis I produce an acute arthritis in certain joints and there are no more joints involved. Clinically, unfortunately, that doesn't happen. The results of immunization were similar to my experience a few years ago. In a group of animals I tried to sensitize some and immunize others. I then injected small doses of streptococci directly into the joints. Streptococcus viridans and hemolytic streptococci were used and in all instances I was able to produce a purulent arthritis, regardless of whether or not the rabbits had been immunized or sensitized or were controls. In other words, I was not able to detect any difference between the three groups of animals. I have never accepted Ghormley and Allison's statement that there is a specific microscopic picture for atrophic arthritis. Joint tissues can react only in certain ways and if one submits the joint to a long drawn out chronic infection one gets proliferative changes and round cell infiltration and one may find these round cells in nodules with a relatively clear center. This microscopic picture can be produced in different ways and it is the result of chronic inflammation rather than of a specific type of infection.

DR. JAMES F. RINEHART, San Francisco: I am inclined to agree with Dr. Key that the experimental arthritis of Dr. Angevine and his co-workers may have been suppurative at the onset. At least it has not been clearly shown that this was not so. The chronic scorbutic arthritis in guinea pigs is distinctly a polyarthritis. If the deficiency is maintained over a period of time, various joints are involved in sequence. The knee joints usually are first affected and subsequently the wrists, the elbows and other joints. The arthritis is of a proliferative type. I would like to echo Dr. Key's remark about specificity of certain pathologic changes in rheumatoid arthritis. I do not believe that focal accumulations of lymphocytes in the subsynovial tissues can be considered specific for this type of arthritis. The subcutaneous nodule and comparable reactive changes in the periarticular tissues are probably much more nearly if not actually specific for this disease.

DR. D. MURRAY ANGEVINE, New York: When large doses of hemolytic streptococci are injected, the animals develop arthritis in practically every joint. In these cases the synovial fluid is usually purulent. However, if the dose is reduced so that the animal is not overwhelmed by the injection, an entirely different picture is seen in the joints. At first the process is an acute inflammatory one that is characterized by an increase in the number of polymorphonuclear leukocytes in the synovial fluid. However, this material is not frankly purulent and I do not believe that such a joint should be described as suppurative, although it would be regarded as an acute inflammatory exudate. When one does a necropsy on an animal with arthritis produced by a staphylococcus, one finds the same type of pus or purulent exudate in the joint space that one would find in a boil or carbuncle. This was not the case in the experimental streptococcic arthritis. The synovial fluid is easily aspirated, and we have done it repeatedly even as early as six hours after injection. We have found a considerable number of polymorphonuclear leukocytes in this aspirated fluid in the early stages. A rabbit's normal leukocyte count is about 10,000, or twice the normal for man. This might help to explain the larger number of polymorphonuclear leukocytes that are usually seen in this type of arthritis. It is well known that in rheumatoid arthritis the leukocyte count of the synovial fluid is often elevated to 25,000 and occasionally to 50,000 cells with a high percentage of polymorphonuclear leukocytes. We usually infer from this that the inflammatory process in the synovial fluid in cases of rheumatoid arthritis is often acute. If repeated injections of streptococci are given, one also produces a purulent arthritis. In reference to the question as to whether arthritis appeared in other joints after a longer time, I may say that we rarely observed joint involvement more than two weeks after injection. However, in a group of animals in which we have lowered the resistance by various means we have observed the development of arthritis in additional joints after an interval of thirty days subsequent to injection. I trust that we have not given the impression that we feel certain that there is an atypical pathologic picture for rheumatoid arthritis. We merely included this slide in order to demonstrate the type of disease process that we have attempted to reproduce.

The Treatment of Gonorrheal and Rheumatoid Arthritis with Sulfanilamide

DRS. HOWARD C. COGGESHALL and WALTER BAUER, Boston: In order to determine the value of sulfanilamide as a chemotherapeutic agent in the treatment of gonorrheal and rheumatoid arthritis, the following studies were undertaken:

1. Fourteen cases of proved and four cases of probable gonorrheal arthritis, two cases of uncomplicated gonorrhea, two cases of proved and two cases of probable gonorrheal prostatitis were carefully observed during and following the administration of large doses of sulfanilamide for periods of two weeks or longer.

2. The same large doses of sulfanilamide were administered for similar periods of time to ten patients suffering from mild to moderately severe rheumatoid arthritis of varying duration.

The dosage was calculated in the following manner: Three-fourths grain (0.15 Gm.) per pound (450 Gm.) of body weight was administered every twenty-four hours. In a few instances the initial dose equaled one-half the calculated twenty-four hour amount. This amount was readministered in four hours. Every four hours thereafter, the patient received one tenth of the calculated twenty-four hour amount. This method of administration results in sulfanilamide blood levels of 15 + mg. per hundred cubic centimeters. In most cases the initial dose and the dose administered every four hours, day and night, during the period of therapy equaled one sixth of the calculated twenty-four hour dose. This method of administration results in sulfanilamide blood levels of from 7 to 10 mg. per hundred cubic centimeters. Sulfanilamide when administered to persons with normal renal function is readily excreted. Therefore, if the necessary constant sulfanilamide blood levels are to be maintained throughout each twenty-four hour period, the drug must be administered every four hours day and night.

From the results obtained it would seem justifiable to conclude that sulfanilamide when administered in large doses for two weeks or longer is a specific chemotherapeutic agent for certain strains of gonococci because: 1. Infected synovial fluids become sterile in from twenty-four to seventy-two hours after the institution of therapy. 2. In sixteen of the eighteen cases in which there was a proved genito-urinary focus, no gonococci were found after the third day of treatment. In one instance the genito-urinary focus did not become negative until the sulfanilamide blood level had reached 10 + mg. per hundred cubic centimeters. These seventeen patients remained clinically cured during the follow-up period. 3. The gonococcus complement fixation test failed to become positive in three cases of gonorrheal arthritis with infected synovial fluids. In nine of the remaining eighteen cases the complement fixation test became negative. 4. Nine of the proved and two of the probable cases of gonorrheal arthritis showed striking clinical improvement in from forty-eight to seventy-two hours after the institution of sulfanilamide therapy. The final end results in fourteen of the proved and four of the probable cases of gonorrheal arthritis were more satisfactory and took place in a shorter time than occurs with other forms of therapy. 5. The cases of gonorrheal arthritis in which an immediate clinical response occurred within forty-eight to seventy-two hours after the administration of sulfanilamide likewise showed a rapid fall in the erythrocyte sedimentation rate to normal.

Our results to date indicate that the dose of sulfanilamide necessary to cure gonococcic infections varies greatly. In some instances clinical cures are effected when the free sulfanilamide blood level is maintained at 5 mg. per hundred cubic centimeters while other cases require levels of 10 mg. or higher. The largest percentage of clinical cures will be obtained in patients with gonococcic infections if sulfanilamide is administered in large doses. If improvement does not occur within seventy-two hours, it probably means that the dosage employed is not adequate and therefore should be increased. Early administration of the drug in adequate amounts can prevent joint destruction.

The clinical course of rheumatoid arthritis was not affected in the ten patients treated with large doses of sulfanilamide, thus suggesting that the agent responsible for rheumatoid arthritis is not susceptible to this type of therapy. The rapid erythrocyte sedimentation rates observed in this group remained unchanged.

The toxic manifestations resulting from sulfanilamide therapy are readily recognized. The majority of them do not represent serious complications. Cyanosis is always present in patients receiving large doses. The dyspnea and the reduction of the plasma carbon dioxide content is directly related to alterations in the electrolyte metabolism (unpublished data). We have not encountered acute hemolytic anemia during the administration of sulfanilamide but have observed a slow, progressive subclinical hemolytic anemia in twelve cases. Leukopenia was observed in two cases.

DISCUSSION

DR. T. DUCKETT JONES, Boston: The excellent results of Drs. Bauer and Coggeshall in treating gonorrheal arthritis are in no sense approached in rheumatic fever. We cannot even conclude that the clinical course is unaltered, as they do with regard to sulfanilamide in the treatment of rheumatoid arthritis. I had high hopes when the drug was first introduced that it might be effective either in the prevention or in the treatment of rheumatic fever. No encouragement has been reported to date for either. Swift has reported its ineffectiveness in eight cases and was led to conclude that the toxic action of the drug in active rheumatic fever far outweighs the beneficial therapeutic effect. In fact, from his protocols it is difficult to see that any ameliorating influence was noted. I have noted no definite beneficial effect on the course of rheumatic fever although I have tried it in fifty-eight cases in which varying degrees of severity of the disease occurred. Striking is the fact that thirty-one of the fifty-eight patients presented definite evidence of toxicity to the drug. The more severe the rheumatic fever, the more frequent and severe the reaction. It is dangerous in the seriously ill rheumatic fever subject, and I should strongly urge against its administration. I have encountered pulmonary edema in such patients. Because of

the frequency of the association of hemolytic streptococcus infection in conjunction with the onset and recurrence of rheumatic fever, it was at first thought that studies of etiologic significance might be obtained; but this hope was dispelled by Swift. He demonstrated, and I have confirmed the observation, that hemolytic streptococcus immune responses, as indicated by a use in the antistreptolysin titer, occur in rheumatic fever subjects despite the use of sulfanilamide. A small group of rheumatic fever subjects having hemolytic streptococcus throat infections were treated with sulfanilamide in an attempt to prevent the development of recurrent rheumatic fever. Alternate patients were given salicylates as a control group. In each group (six each) there were two severe recurrences and a fatal issue in each. The only difference between the two groups was the evident comfort of the group treated with acetylsalicylic acid as compared to the patients receiving sulfanilamide. This does not completely settle the question of prevention of recurrences of rheumatic fever and I am sure that some one will ultimately present a study large enough to be of statistical value, in which the blood level of free sulfanilamide in rheumatic fever subjects is kept at a reasonably high level during the winter and spring seasons when hemolytic streptococcus infection and recurrent rheumatic fever are common. I should like to stress with the authors that large doses be given and spaced throughout the day, that the blood level of free sulfanilamide be frequently determined and kept at least near the 10 mg. mark, and that complete blood studies be made at frequent intervals. Only when these features are observed will it be possible to compare reports on the therapeutic value of sulfanilamide.

DR. M. HENRY DAWSON, New York: Since March 1937 I have treated thirty-two patients suffering from gonorrheal arthritis with sulfanilamide. The results, while favorable, have not been as brilliantly successful as those reported by Drs. Coggeshall and Bauer, but I think from their report that some of the reasons are apparent. In the first place, I have treated a large number of chronic and subacute cases and in some of these the results have been equivocal. In many of the acute cases I have had the same spectacular success which has been reported. In the second place, my patients for the most part have been treated in an ambulatory clinic where it has not been possible to give as large doses of the drug; indeed, the whole problem of dosage could not be controlled. There are now a large number of favorable reports in the literature concerning the value of sulfanilamide in gonococcic infections and the carefully controlled work reported by Drs. Coggeshall and Bauer is particularly conclusive. I should like to add a few words concerning a procedure which I have recently tried on resistant and subacute and chronic cases; that is, a combination of sulfanilamide and fever therapy. The procedure has been to employ more moderate degrees of fever than those customarily employed in treating this disease, usually from 104 to 105 F. for five or six hours together with sulfanilamide (1.2 Gm. every six hours). The results of this combined treatment have been almost uniformly successful and several cases which did not respond to the drug alone were quickly cured. Similar results have been reported by Ballinger, Elder and McDonald and by Cheetham and Roemer. The results obtained by Drs. Coggeshall and Bauer with the use of sulfanilamide alone have been so good that it may not be necessary to use combined therapy. In any case it would appear that we now possess highly effective methods for the treatment of this condition.

DR. PHILIP S. HENCH, Rochester, Minn.: In the past eight years great advances have been made in the treatment of gonorrheal arthritis. Although I certainly do not begrudge the victims of the disease their good fortune in now having at hand such successful measures for treatment, it has always seemed to me rather "unfair" that that much larger army, the poor victims of atrophic arthritis, must still wait for an equally rapid and successful treatment. At the moment some physicians are arguing the respective merits of fever therapy and sulfanilamide for gonorrheal and gonorrheal arthritis. But the argument will not long continue because any patient would rather take pills, even though they produce certain disagreeable symptoms, than endure the stress of prolonged sessions of fever therapy. Furthermore, current experiences indicate that, in general, sulfanilamide is as promptly successful as is fever therapy. However, a small percentage of patients with gonorrhea and gonorrheal arthritis do not respond to the administration of sulfanilamide or cannot take it in effective amounts because of its toxicity for them. In my experience about 10 per cent of patients with gonorrhea either cannot tolerate sulfanilamide at all or cannot tolerate enough of it to be effective. When a patient with gonorrheal arthritis does not respond promptly after taking sulfanilamide for three or four days, we at the Mayo Clinic discontinue the drug at once and prescribe fever therapy without further delay in order to avoid the risk of serious articular destruction. Sometimes fever therapy is then promptly successful. There are certain particularly potent strains of gonococci that are resistant not only to sulfanilamide but also to fever. Against such strains the use of sulfanilamide combined with fever therapy is at times effective; sometimes it is not. At the Mayo Clinic we have been using, in general, about two-thirds the amount of sulfanilamide advocated by Drs. Coggeshall and Bauer; perhaps our doses were inadequate in some cases. However, Dr. Cook of our urologic department has generally found that patients who did not respond to a daily dose of from 60 to 80 grains (4 to 5.3 Gm.) of sulfanilamide usually failed to respond also when the dose was increased to 100 or 120 grains (6.5 to 8 Gm.) daily. We have been disappointed with the results of sulfanilamide in the treatment of atrophic arthritis and rheumatic fever. In such conditions the patients have not been significantly benefited and marked toxicity frequently has developed. In almost the first case of atrophic arthritis in which we used this treatment a serious agranulocytosis developed but the patient fortunately recovered: this was the first instance of this kind brought to the attention of the American dispensers of the drug. In another case of atrophic arthritis, chills and fever (to 105 F.) occurred for four days; these symptoms subsided promptly when the administration of sulfanilamide was stopped. In still another case of atrophic arthritis fever (102 F.) occurred daily, associated with prostration and anorexia; although the administration of the drug was promptly stopped, these symptoms persisted for about three weeks. Although these poor results from sulfanilamide do not entirely contradict the hemolytic streptococcus theories of atrophic arthritis and of rheumatic fever, they do put the adherents of these theories on the defensive and I should like to hear some discussion on this point.

Neuropathic Joint Disease

DRS. KEENE O. HALDEMAN and RALPH SOTO-HALL, San Francisco: Certain diseases and injuries involving the spinal cord destroy the sensory protective mechanism of joints. Such joints, with single or repeated traumas, develop effusion and ligamentous relaxation, which is followed by the erosion of their cartilage, an irregular sclerosis of the subchondral bone, the production of parosteal bone, and intra-articular fractures which lead to a more or less complete disintegration of the joint. The absence of pain and the clinical and laboratory evidence of tabes dorsalis, syringomyelia or other cord lesions complete the picture of a neuroarthropathy, or so-called Charcot joint.

A series of forty-six patients showing neuropathic joint involvements in tabes dorsalis, syringomyelia, leprosy and traumatic paraplegia have been studied. The records of the forty patients suffering from tabetic arthropathies were tabulated according to the age, sex and joint involvement and certain clinical and laboratory observations. The proportion of males to females with such arthropathies is similar to the sex incidence of tabes dorsalis. The great majority of joint involvements appear between the ages of 40 and 60 years, at an average of twenty years after the occurrence of the primary lesion of syphilis.

Charcot joints most frequently occur in the lower extremity, the knee joint being the usual site of involvement. The positive clinical evidence of rigid pupils and absent knee jerks is of much greater importance than the various tests performed on the blood and spinal fluid in the diagnosis of a tabetic arthropathy. In an early stage of the neuropathic joint disease, its progress may be halted by the use of a protective brace.

We have adopted a method of producing the fusion of a Charcot joint in two stages. A preliminary drilling of the ends of the bones making up the joint is done for the purpose of

increasing their osteogenic power, followed in six weeks by the usual arthrodesing operation. Such a procedure in five cases resulted in firm bony fusion in three instances, with the final result not yet determined in the remaining two.

DISCUSSION

DR. L. MAXWELL LOCKIE, Buffalo: It is surprising that so many of these patients show a multiplicity of the joint involvement of the Charcot type. Many physicians erroneously dismiss the diagnosis of syphilitic joint disease if the blood Wassermann reaction is negative.

DR. ROBERT WARTENBERG, San Francisco: This study reminds us that there is such a definite clinical entity as the tabetic neuropathic joint, and that it is not, as Virchow believed, simply a modified arthritis deformans occurring in a tabetic patient. There are three theories of pathogenesis. The first considers the tabetic joint as due to an avascular, inflammatory process, from a syphilitic arteritis, phlebitis and osteitis. This theory can be easily disproved. The clinical picture of the two diseases is quite different. The "mechanical" theory states that the tabetic joints are essentially traumatic in origin and due to a combination of analgesia, hypotonia, loose joints, osteoporosis and ataxia. The tabetic patient maltreats his joints and doesn't feel it. Generally speaking, it is inconceivable that the normal use of the limbs and the spine could produce, even if the sensibility is lost, such grotesque bone proliferation and bone destruction as are found in tabetic joints. There is no adequate relationship between cause and effect. It is a clinical fact that tabetic joints may be demonstrable, especially by x-ray examination, at an early period of the tabes when there is no ataxia and no analgesia. They may develop in bedridden patients and appear often acutely. Sometimes the analgesia is not complete and yet the joint changes are profound. This theory cannot explain the "mal perforant" which often accompanies the tabetic joint or the arthropathies in syringomyelia where there is no ataxia. To support the mechanical theory, experimental work on cats has been done: the posterior roots have been cut, the limbs rendered anesthetic and traumatized. Arthropathies similar to those of the tabetic were claimed to be thus produced. But in addition to the sensory fibers which were cut in these experiments, they have in all probability also to do with transmission of trophic impulses. The third, the trophic, theory considers as the fundamental pathogenic factor in the production of tabetic joints the disturbance in the nervous trophic regulation. Although the trophic state of the tissues is essentially the function of the tissue cells themselves and there are in all probability no specific trophic fibers, a trophic regulatory influence of the nervous system must be assumed. The trophic impulses avail themselves of other tracts, such as motor, vasomotor, secretory and sensory fibers which are capable of antidromic conduction. Certain manifestations in tabes point to their possible sympathetic origin: subcutaneous and intestinal hemorrhages, visceral pain attacks, secretory crises, i. e. gastrorrhea, sialorrhea, galactorrhea. Interesting in this regard are the recently discovered local disturbances in sympathetic vessel innervation found in unilateral tabetic arthropathies, especially in the neighborhood of the affected joints. The following pathologic disturbances were found: elevation of the local temperature, rise in the arterial and venous blood pressure, increase of the oscillometric index, anomalies of the sweat secretion and disturbances in the pilomotor reflex. These clinical observations, together with the postmortem changes, indicate the role of the sympathetic nervous system in this disease and possibly also in the production of tabetic joints. The trophic influence is exerted by a reflex arc in the same way as is the motor influence. The centripetal limb of this arc probably goes through the sensory fibers, the centrifugal through the vasomotor fibers. The lesion which produces trophic disturbances may lie at any point of these two limbs or at their juncture. It is essential for the understanding of pathologic trophic changes to bear in mind that the trophic state of the tissues is much more influenced by a pathologic change of this nervous regulation than by a complete cessation. The cardinal sign of tabes, ataxia, is due to the fact that the outgoing motor impulses are not properly regulated by the incoming sensory impulses. In tabes the nervous trophic regulation is disturbed in the same way as the motor mechanism. In both instances the reflex arc is disturbed, and in both instances there is too much or too little innervation. In the tabetic joints, both grotesque bone proliferation and bone destruction occur. By this trophic-ataxia theory the pronounced influence of ataxia and trauma can be easily explained. Asher has demonstrated that a skin with disturbed sympathetic innervation shows diminished resistance. In the same way the trophic regulation of tabetic joints thus far maintained fails when ataxia, loose joints and so on put too severe requirements on the joints. The whole problem is still not solved and the words of Virchow in 1854 "The trophic influence of the nerves is still a dark chapter" even now hold true.

DR. J. ALBERT KEY, St. Louis: What happens in Charcot joints is not due to trauma and is not due to a change in the blood vessels. There is a decrease in the toughness of the tissue; this change is not limited to the bone and cartilage. The ligaments disintegrate. This is not due to the loss of muscle tone. Persons who walk year after year with infantile paralysis develop deformities; the weak muscles stretch and their ligaments are put to tremendous abnormal strains. Their articular surfaces are subjected to mechanical insults far greater than occur in Charcot joints, yet the articular surfaces remain in good condition. So I am perfectly sure in my own mind that in Charcot joints there is a trophic change and that that change affects the white fibrous tissue—not only the white fibrous tissues of the ligaments but the cartilage and the bone. The bone loses its toughness and disintegrates, and so does the cartilage. It is obvious that tabetic patients don't have any difficulty in producing bone. I have always thought that the reason Charcot joints were considered difficult to operate on and fuse was that the patients are difficult to treat. The muscles have lost their tone, there is nothing to hold these bone ends together, and mechanical fixation is necessary. Some years ago I published a paper in which I advised putting a pin through the tibia, another through the femur and pulling them together with turnbuckles and that worked all right. Bone is more apt to unite if one bores holes in it in an attempt to convert the hard compact bone to a soft, spongy cancellous bone, because new channels for bone to grow are opened. I think this method of Drs. Haldeman and Soto-Hall of doing it in two stages is a good one.

DR. H. H. MANN, Los Angeles: How would you diagnose a case of tabes in which the symptoms are in the hip joint, and the x-ray examination shows a reduction in joint space? As rheumatoid arthritis, tuberculosis, or Charcot joint? Would the sedimentation rate be of any value?

DR. C. L. STEINBERG, Rochester, N. Y.: For several years I have observed a neuropathic syndrome associated with atrophic or rheumatoid arthritis. This syndrome is characterized by catarrhal involvement of the cochlear division of the acoustic nerve. The vestibular root escapes injury. The "nerve" deafness is associated with exacerbations of the arthritis. These people become quite deaf during exacerbations and have normal or almost normal hearing with remissions or "cure" of the arthritis. This syndrome has been observed not infrequently in the third and fourth decades. The improved hearing noted in this group might be due to the remission or it might occur from the large doses of vitamin B_1 that I have been employing in their treatment. For the past two years I have been giving my arthritic patients a minimum of 400 B_1 units daily for its possible analgesic action. The analgesia has not occurred but auditory improvement has been noted. Drummond in 1934, Selfridge in 1937 and several other otologists have described some types of eighth nerve deafness that responded to vitamin B_1. Selfridge has apparently been able to produce a progressive degeneration of the eighth nerve in animals fed a deficient vitamin B_1 diet. May not the increased demand for vitamin B previously suggested in a recently published article account for the eighth nerve involvement in arthritis?

DR. KEENE O. HALDEMAN, San Francisco: We believe that the differential diagnosis in involvement of the hip rests primarily on the absence of pain and on the proliferative changes which one occasionally sees. Most of our cases of Charcot hip had a fracture and then went on to a disintegration of the hip. In our entire series of forty tabetic arthropathies, eighteen patients gave a history of fractures, which often seemed to initiate the changes in the involved joint.

(To be continued)

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted below.

American Journal of Pathology, Boston

14: 515-690 (Sept.) 1938

Malignant Giant Cell Tumor of Bone. F. W. Stewart, B. L. Coley and J. H. Farrow, New York.—p. 515.
Blood Plasma Proteins as Influenced by Liver Injury Induced by Carbon Tetrachloride and Gum Acacia. C. C. Erickson, G. P. Heckel and R. E. Knutti, Rochester, N. Y.—p. 537.
Comparative Morphologic Study of Mammary Gland in a High and a Low Tumor Strain of Mice. Elizabeth Fekete, Bar Harbor, Maine. —p. 557.
*Studies on Infectious Agent of Inclusion Blennorrhea. L. A. Julianelle, R. W. Harrison and A. C. Lange, St. Louis.—p. 579.
*Phagocytic Activity of Human Leukocytes, with Special Reference to Their Type and Maturity. A. J. Hertzog, Minneapolis.—p. 595.
Lymph Node Metastasis of Sarcoma. S. Warren and R. W. Meyer, Boston.—p. 605.
Primary Liposarcoma of Bone: Report of Case. J. Duffy and F. W. Stewart, New York.—p. 621.

Infectious Agent of Inclusion Blennorrhea.—In trying to prove that inclusion blennorrhea and trachoma are separate entities, Julianelle and his associates studied the twenty-two cases of inclusion blennorrhea admitted to the ophthalmologic clinic of Washington University, the St. Louis Maternity Hospital (three) and the Bethesda Hospital of St. Louis (one). Diagnosis was verified by a search for the characteristic inclusions. Material for study consisted of a suspension of tissue fragments obtained by scraping (for therapeutic purposes) the conjunctiva of the everted lid. The tissues thus removed were emulsified in 1 cc. of veal infusion broth (p_H 7.6 to 7.8). The suspension of tissues was always triturated under sterile conditions, without the intervention of abrasive substances, immediately on return to the laboratory. In testing the infectivity of the tissues, inoculations were made by direct swabbing from patient to animal (apes and monkeys), by swabbing with the suspension of tissues or by injection. A corollary experiment was conducted in which animals recovering from experimental inclusion blennorrhea were inoculated at a later date with active material from trachoma. It was not possible to show that the former infection offered any protection to the later inoculation. The studies suggest that the infectious agent of inclusion blennorrhea is not bacterial. It appears to be a virus capable of inducing specific infection in monkeys after passage through Berkefeld V and collodion filters, in this respect corroborating and amplifying experiments of other observers. Analysis of the individual manifestations reveals that both in spontaneous and in experimental infection there is a shortening of the incubation period and duration in inclusion blennorrhea. While in appearance the two diseases are similar in the monkey, in man trachoma only induces cicatrization, corneal complications and impairment of visual acuity and exhibits a marked tendency toward recurrence after apparent healing. Silver nitrate has been found to be an effective therapeutic agent in trachoma but not in inclusion blennorrhea. Trachoma, moreover, occurs only in the eye and its adnexa, while inclusion blennorrhea is essentially a genital infection transmitted from the mother to the infant before birth. While there can be no doubt that the two ocular infections are clinically different, any and all of the differential characteristics may be due as much to variations in degree of pathogenicity of the strains of virus involved as to any actual distinctions in species. The inability of both viruses to survive serial animal passage, stimulate immunity and initiate artificial propagation and the resemblance of the respective inclusions suggest that the two viruses fall within the same or closely related biologic groups. Other authors have considered the infectious agent of inclusion blennorrhea to be the inclusion body itself. The present study offers no information to support or refute this opinion.

Phagocytic Activity of Human Leukocytes.—Hertzog studied the phagocytic activity of the leukocytes from seventeen cases of leukemia, three cases of infectious mononucleosis, four cases of lymphocytosis and two cases of eosinophilia. Staphylococci and streptococci were used as test particles. The mature polymorphonuclear neutrophils showed the greatest amount of phagocytosis both as to the number of bacteria ingested per cell and as to the percentage of cells engulfing bacteria. The monocytes, eosinophils and metamyelocytes were also actively phagocytic. The phagocytic activity of the myelocytes, promyelocytes, leukoblasts and myeloblasts appears to be directly proportional to the maturity of the cell, as there was a marked decrease in phagocytosis in the more immature forms. An exception was found in the histoid stem cell and histoid monoblast of leukemic reticulo-endotheliosis, as these immature cells showed an unusual degree of phagocytosis. Phagocytosis was observed in a small proportion of mature lymphocytes. The degree of phagocytosis increased as the cell grew larger with a corresponding increase in cytoplasm. The leukocytoid lymphocyte of infectious mononucleosis showed the greatest phagocytic activity. Hence, lymphocytes in their prephagocytic stage may occasionally show phagocytosis under experimental conditions.

American Journal of Psychiatry, New York

98: 255-508 (Sept.) 1938

The Likeness of Cortical Dysrhythmias of Schizophrenia and Psychomotor Epilepsy. F. A. Gibbs, E. L. Gibbs and W. G. Lennox, Boston. —p. 255.
Treatment of Schizophrenia with Insulin Shock: Personal Experiences and General Review. A. H. Vander Veer, Chicago, and H. H. Reese, Madison, Wis.—p. 271.
Insulin Treatment of Psychoses: Suggested Mechanism. E. Ziskind and Esther Somerfeld-Ziskind, Los Angeles.—p. 291.
Metrazol Treatment in Schizophrenia: Study of Thirty-Five Cases in Private Practice, Complications and Their Prevention. N. W. Winkelman, Philadelphia.—p. 303.
Chart for Control and Recording of Insulin Shock Therapy. D. Goldman, Cincinnati.—p. 317.
Multiple Therapy in the Psychoses. H. H. Goldstein, E. F. Dombrowski and J. V. Edlin, Chicago.—p. 321.
Early Effects of Metrazol Therapy in Chronic Psychotic Overactivity. L. H. Cohen, Worcester, Mass.—p. 327.
Histopathology of Psychoses with Subacute Bacterial and Chronic Verrucose Rheumatic Endocarditis. W. L. Bruetsch, Indianapolis.—p. 335.
Present Status of Fever Therapy in Prevention and Treatment of Neurosyphilis. A. J. Rosanoff, Los Angeles.—p. 347.
Effect of Adrenalin and Mecholyl in States of Anxiety in Psychoneurotic Patients. E. Lindemann and J. E. Finesinger, Boston.—p. 353.
*Effective Use of Phenobarbital and Benzedrine Sulfate (Amphetamine Sulfate) in Treatment of Epilepsy. B. Cohen, North Grafton, Mass., and A. Myerson, Boston.—p. 371.
Observations on Confabulation. H. W. Williams and C. Rupp, Howard, R. I.—p. 395.
Ulcerative Colitis and the Personality. W. T. Brown, P. W. Preu and A. J. Sullivan, New Haven, Conn.—p. 407.

Phenobarbital and Amphetamine Sulfate in Epilepsy.—Cohen and Myerson found that phenobarbital adjusted individually with reference to the rhythm of each patient's seizures reduced the seizures in male patients by 69 per cent; of the ninety-three patients treated eighty-three were improved. Sixty-seven patients showed a 50 per cent reduction of seizures or better. Of fifty female patients forty-five were improved with a total seizure reduction of 61 per cent. Thirty-four patients showed 50 per cent reduction of seizures or better. Amphetamine sulfate (benzedrine sulfate) proved specific in the treatment of ataxia and drowsiness which developed in fifteen patients in the course of phenobarbital medication. The daily dosage of amphetamine varied from 5 to 20 mg. Amphetamine permits the retention of effective doses of phenobarbital otherwise impossible. It does not increase the number or the severity of the epileptic seizures. It has no apparent effect on the blood sugar, nonprotein nitrogen or creatinine or on the basal metabolic rate, pulse rate or blood pressure. There appears to be no necessity for routine catharsis in the treatment of epilepsy when phenobarbital dosage is adequate.

American Journal of Surgery, New York

40: 1-296 (Oct.) 1938. Partial Index

The Use of Orbicularis Palpebrarum Muscle in Surgery of the Eyelids. J. M. Wheeler, New York.—p. 7.
Surgery of Secondary Glaucoma. A. Greenwood, Boston.—p. 10.
Technic of Extraction of Intra-Ocular Foreign Bodies. W. B. Lancaster, Boston.—p. 14.
*Certain Postoperative Complications of Cataract Operations, with Especial Reference to Study of 1,004 Operations. C. Berens and D. W. Bogart, New York.—p. 39.
Management of Complications of Intra-Ocular Surgery. E. L. Goar, Houston, Texas.—p. 62.
Review of Some Modern Methods for Ophthalmic Plastic Surgery. E. B. Spaeth, Philadelphia.—p. 89.
Aural Surgery: Theoretical and Technical Advances in Recent Decades. P. D. Kerrison, New York.—p. 103.
Acute Encephalitis or Toxic Encephalopathy Simulating Brain Abscess. P. J. Zentay, St. Louis.—p. 112.
Diagnosis and Treatment of Otogenic Meningitis. S. J. Kopetzky, New York.—p. 131.
The Education of the Deaf and Hard-of-Hearing Child. M. A. Goldstein, St. Louis.—p. 151.
Malignant Diseases of Paranasal Sinuses. G. B. New, Rochester, Minn. —p. 170.
*Dietary Treatment of Chronic Sinusitis. B. R. Shurly, Detroit.—p. 174.
Deep Abscess of the Neck: Surgical Treatment. J. F. Barnhill, Miami Beach, Fla.—p. 207.
Types of Laryngeal Obstruction and Their Treatment. L. Richards, Boston.—p. 239.
Surgical Indications in Perforation of the Esophagus by Foreign Bodies. J. R. Head, Chicago.—p. 266.
Benign Tumors and Tumor-like Conditions in Tracheobronchial Tree. C. Jackson and C. L. Jackson, Philadelphia.—p. 275.

Postoperative Complications of Cataract Operations.—Because many complications may be prevented Berens and Bogart analyzed the records of the 1,004 cataract extractions performed at the New York Eye and Ear Infirmary during the last two years. Extracapsular extractions were performed on 702 patients and intracapsular extractions on 302. The most frequent postoperative complications were hemorrhage into the anterior chamber (4 per cent in the intracapsular cases and 1.4 per cent in the extracapsular cases) and loss of vitreous (9.9 per cent in the intracapsular cases and 9 per cent in the extracapsular cases). The other complications, detachment of the retina, detachment of the choroid, suppurative intra-ocular infection and prolapse of the iris, occurred in only a few cases of each series. Secondary glaucoma occurred in seven extracapsular cases; iridocyclitis was observed following seven extracapsular extractions and two intracapsular operations. If the number of postoperative complications is to be reduced, there seems to be little question that the preliminary examination is most important. Careful preoperative study of the patients, combined with the institution of treatment for chronic infections, hyperglycemia, hypertension and other general diseases when found may prevent serious postoperative complications which frequently result in impaired vision or blindness. Careful complete suturing of the wound with a complete but not too wide conjunctival flap seems to be one of the best methods of preventing many serious postoperative complications. In the postoperative care of the patient the most important single factor in preventing complications (other than careful nursing, the treatment of cough as well as other movements which might endanger the eye) is the careful postoperative examination of the eye, especially the avoidance of squeezing by unnecessary or clumsy manipulation.

Dietary Treatment of Chronic Sinusitis.—In summary, Shurly points out that the treatment of chronic sinusitis calls for surgical intervention. Dietetic treatment should be used as a therapeutic aid. Prophylactic treatment in early infancy may offer much in preventing bony malformations of the nose and sinuses, through the proper use of vitamin D, particularly in milk, eggs and leafy vegetables. Vitamin A deficiency may influence the resistance to infection, with lowered vitality of tissues, especially in the ear, nose and throat. Vitamin C has a special influence on the mucous membranes of the gums, nose and mouth. The value of raw vegetable juice and mineral salts lies in promoting cell growth and selection. Special attention to endocrine balance with the use of iodine and thyroid extracts is of value in establishing vasomotor tones. Food allergy must be determined by special tests and the history. The prevention of sinus infection at the time of the removal of tonsils and adenoids may require special dietetic treatment and cod liver oil.

Annals of Surgery, Philadelphia

108: 481-800 (Oct.) 1938

Address of the President: Relation of Surgeon and Hospital. A. W. Elting, Albany, N. Y.—p. 481.
Need of a National Council on Medical Education, Licensure and Hospitals. W. C. Rappleye, New York.—p. 489.
Treatment of Cranial Osteomyelitis and Brain Abscess. A. W. Adson, Rochester, Minn.—p. 499.
*Rapid Control of Intracranial Pressure. E. R. Schmidt, Madison, Wis. —p. 520.
Progressive Exophthalmos Associated with Disorders of Thyroid Gland. H. C. Naffziger, San Francisco.—p. 529.
Injuries to Recurrent Laryngeal Nerve in Thyroid Operations: Their Management and Avoidance. F. H. Lahey and W. B. Hoover, Boston. —p. 545.
*Amount of Thyroid Tissue to Be Left in Operations for Diffuse Toxic Goiter. M. K. Smith, New York.—p. 563.
Iodine Metabolism in Exophthalmic Goiter. G. M. Curtis and I. D. Puppel, Columbus, Ohio.—p. 574.
Mediastinitis Following Cervical Suppuration. H. E. Pearse Jr., Rochester, N. Y.—p. 588.
The Management of Certain Lesions of the Esophagus. G. C. Penberthy and C. D. Benson, Detroit.—p. 612.
Lymphatic Spread of Carcinoma of Rectum. R. K. Gilchrist and V. C. David, Chicago.—p. 621.
*Arteriovenous Aneurysms. M. B. Reid and J. McGuire, Cincinnati.—p. 643.
Spontaneous Arteriovenous Fistula Between Abdominal Aorta and Inferior Vena Cava: Case Report. E. P. Lehman, University, Va.—p. 694.
Congenital Arteriovenous Fistula or Fistulas: Case Report. W. D. Wise and E. T. Lisansky, Baltimore.—p. 701.
Heminephrectomy in Disease of the Double Kidney: Report of Fourteen Cases. E. Boer and W. H. Mencher, New York.—p. 705.
Denervation of Bladder for Relief of Intractable Pain. W. J. M. Scott and C. F. Schroeder, Rochester, N. Y.—p. 730.
Repair of Abdominal Incisions. A. O. Whipple and R. H. E. Elliott Jr., New York.—p. 741.
Spontaneous Rupture of Superior and Inferior Epigastric Arteries Within Rectus Abdominis Sheath. R. L. Payne, Norfolk, Va.—p. 757.
The Replacement of Sodium Chloride in Surgical Patients. F. A. Coller, R. M. Bartlett, D. L. C. Bingham, W. G. Maddock and S. Pedersen, Ann Arbor, Mich.—p. 769.

Rapid Control of Intracranial Pressure.—The method for controlling intracranial pressure that Schmidt recommends depends on mechanics alone, is rapid, and he thinks effective in most cases. The method consists of inserting a No. 6 French ureteral catheter through a trephine opening in the skull. The ventricle is first punctured with an ordinary ventricular puncture needle in order to make a path. Into the ureteral catheter the stylet of the ventricular needle is placed, so as to make it firm. The stylet and catheter are introduced into the ventricle through the previously formed path made by the ventricular puncture. The catheter is anchored with a fine linen stitch to the skin. The top of the catheter should be a little above the skin to prevent the skin from closing over the catheter. A 1:2,000 red mercuric iodide dressing is placed over the end of the catheter. If the catheter becomes occluded it is opened by inserting a long needle into it and aspirating. Suppuration may develop at the skin after a week or more and the catheter has to be removed and inserted on the other side. However, the catheter may be kept for longer periods, depending on the development of suppuration at the skin. The author has used this method in twenty-four cases and found it to be of aid in reducing increased intracranial pressure preoperatively and postoperatively, to stabilize patients who have had pressure for some time, to aid in diagnosis, to reduce emergency operations after ventriculograms or in acute or high intracranial pressure, and to heal the skin over a cerebral hernia. Owing to the danger of introducing infection, one must use the procedure carefully and only after weighing the indications.

Thyroidectomy and Remaining Tissue.—For a number of years Smith has measured remnants of thyroid equal to those remaining by cutting out portions of corresponding size from the specimens removed and weighing them, thus arriving at an estimate of the amount of tissue left in the neck. Seventy-five patients with diffuse toxic goiter in whom this procedure has been carried out and who have been followed with metabolism tests for from eight months to six years form the basis of his study. The fact that relapses occurred in 13 per cent of the cases, a figure that may well be increased after a longer period of observation, would argue that criticism might point rather toward too great conservatism than otherwise. The estimated size of the remnants of thyroid left in the neck has ranged between 3 and 25 Gm. Thirty-seven were recorded as 6 Gm.

or less and thirty-eight as 7 Gm. or more. The most important factors in planning the extent of operation is the severity of the disease and the size of the gland. When the incidence of persistent and recurrent cases is used as a criterion, the results favored the smaller remnants on the basis both of actual weight and of relative proportion. Examination of the individual failtures showed that in no case did the remnant fall into the smaller half of the series on both counts. This indicates that one must be guided in his judgment by the size of the original goiter and in the case of small toxic glands be particularly radical. On the basis of his study the author thinks that a remnant of 4 or 5 Gm. as he has estimated it or, as corrected, 6 or 7 Gm. should result in fewer failures. Blocks of tissue measuring 3 by 1 by 1 cm. seem to be a satisfactory amount of tissue to allow to remain on each side of the trachea in the more toxic cases unless the gland is small. In the case of medium to good sized glands a remnant of 5 Gm. would represent a small proportion of the original goiter, say one tenth or less, a relative amount which in the series studied was followed by a low incidence of postoperative hyperthyroidism. In the case of glands which are little larger than normal, despite a marked toxicity, one should leave smaller amounts than usual so that the relative reduction of thyroid tissue is thorough. In large glands with only mild toxicity, more generous remnants ought to meet the indications.

Arteriovenous Aneurysms.—Reid and McGuire present another series of thirty cases of aneurysms (twenty-one arteriovenous aneurysms and nine cirsoid), discuss the clinical observations and surgical procedures and supplement these clinical studies whenever pertinent by arteriovenous aneurysms produced expgrimentally in dogs. Sixteen of the arteriovenous aneurysms were operated on and all of them, except one of pulsating exophthalmos, were cured. In two instances the aneurysms healed spontaneously without operation. All of the nine cirsoid aneurysms were operated on; three were cured and the other six were improved. There were no deaths in the entire series. There were eight arteriovenous aneurysms which had caused definite cardiac damage; in two there was severe cardiac decompensation. Of the nine cirsoid aneurysms, two showed evidences of some cardiac damage. In every instance in which the heart was demonstrably affected, closure or excision of the fistula was followed by cardiac improvement. In the artery and vein opposite the fistula extensive calcification was noted in the walls of the vessels. In eleven, definite enlargement and thinning of the wall of the proximal artery was present. In many cases the wall of the involved vein was definitely hypertrophied. There was no positive evidence that the circulation time was definitely affected by the fistula. The authors' studies fail to confirm the observations of Holman and others who have reported a large increase in blood volume in cases of arteriovenous aneurysms. Slowing of the pulse rate when the fistula was closed was observed in ten cases and in the experimental animals. The extent of this slowing of pulse rate varied greatly and seemed to be directly related to the seriousness of the cardiac damage and the size of the fistulas. Venous pressures appear unaffected by arteriovenous aneurysms unless there is some evidence of cardiac decompensation, when the changes in venous pressures are similar to those which occur in cases of cardiac decompensation from any other cause. A rise in both systolic and diastolic pressures following closure of arteriovenous fistulas was observed in thirteen cases. That an extensive collateral circulation occurs around an arteriovenous fistula was confirmed in six instances. It is this overabundant collateral circulation which makes the occurrence of gangrene after excision of chronic arteriovenous fistulas practically unknown. The circulation, considerably distal to the fistula, may be impaired as evidenced by absent pulses, coldness of the part, cyanosis and occasional chronic ulcers that will not heal. Nerve paralyses associated with the arteriovenous condition occurred in four cases. Intracranial arteriovenous aneurysms developed in three cases, pulsating exophthalmos in two and a fistula between the ophthalmic vessels behind the eyeball in one. Two arteriovenous aneurysms healed spontaneously. A long period of rest in bed, with elevation of the affected part and the limitation of the intake of fluid, possibly bleeding, soon after the accident, might result in more spontaneous cures. Unless immediate or early operations are required because of hemorrhage, dangerous hematoma, infection or rapid cardiac damage, it is wise to postpone the operation for from three to six months after the occurrence of the fistula. The essential thing in the operative treatment of arteriovenous and cirsoid aneurysms is to eliminate all possibilities of any blood ever again passing through the fistulas. An easy method of making an arteriovenous fistula which can be alternately closed and opened is illustrated.

Archives of Neurology and Psychiatry, Chicago

40: 639-856 (Oct.) 1938

Studies on the Human Neuromuscular Mechanism: II. Effect of Ventromedial Chordotomy on Muscular Spasticity in Man. P. C. Bucy, Chicago.—p. 639.
Studies in Diseases of Muscle: IV. Metabolism of Creatine and Creatinine in Muscular Wasting Subsequent to Disease of the Nervous System. A. T. Milhorat and H. G. Wolff, with technical assistance of V. Toscani, New York.—p. 663.
Id.: V. Metabolism of Creatine and Creatinine in Myotonia Congenita, Myotonia Atrophica, Amyotonia Congenita, Dystonia Musculorum Deformans and Paralysis Agitans. A. T. Milhorat and H. G. Wolff, with technical assistance of V. Toscani, New York.—p. 680.
Enuresis and Other Factors in Normal and in Psychotic Persons: Comparative Study of Incidence and Interrelations. J. J. Michaels, Boston, and Sylvia E. Gutelman, Ann Arbor, Mich.—p. 699.
Cerebral Impoludation. M. Durante, Villejuif, France.—p. 707.
*Eunuchoidism: Psychiatric and Endocrine Study of Six Cases. H. T. Carmichael and A. T. Kenyon, Chicago.—p. 717.
Dependence of Sensation of Pain on Cutaneous Impulses. E. Hollander, New York.—p. 743.
Pathogenesis of Syringomyelia: Case Illustrating the Process of Cavity Formation from Embryonic Cell Rests. K. Tamaki and A. J. Lubin, San Francisco.—p. 748.
The Involutional Melancholia Process. H. D. Palmer and S. H. Sherman, Philadelphia.—p. 762.
Athetosis and Pallidal Deficiency. J. W. Papez, Ithaca, N. Y.; J. Hertzman, Cincinnati, and R. W. Rundles, Ithaca, N. Y.—p. 789.
Etiologic Study of Landry's Original Case of Acute Ascending Paralysis. Madelaine R. Brown, Boston.—p. 800.
Herniation of the Brain Not Heretofore Described. I. Finkelman, Chicago.—p. 803.
The Centenary of Multiple Sclerosis. T. J. Putnam, Boston.—p. 806.

Eunuchoidism.—Carmichael and Kenyon made a clinical study of six eunuchoids from the physical, endocrine and psychiatric points of view. In addition they estimated the urinary excretion of androgen and estrogen and administered extracts of the urine of pregnant women in attempts at therapy. In each instance the development of the secondary sex characters was that of the normal boy aged from 12 to 15. The basal metabolic rate was usually within the lower limits of normal. The patients were thin, fat or of ordinary build. The ratio of sitting to standing height varied from 47.2 to 52.8 per cent, and only one of the eunuchoids, who was very fat, approached closely the average normal value of 52.9. The ratio of span to stature varied from 105.5 to 110 per cent, being in all instances well in excess of the averages for most races cited by Hrdlička. The arms and legs were therefore disproportionately long. The six eunuchoid persons studied showed an average value of 20 international units of androgenic material in the urine daily with the fifteen minute hydrolysis (as compared with approximately 67 international units), with a range of from 7 to 33 units. Seven assays on four of these patients, studied by the two hour hydrolysis method, gave an average of 11 international units, with a range of from 0 to 17 units, as compared with the normal average of 40 units. Thus, no matter what duration of hydrolysis is chosen, the eunuchoid patients excreted about a third of the normal amount of androgenic material. Five eunuchoid patients studied for estrogenic material excreted the equivalents of 2, 2, 1, 2 and 7 micrograms of estrogen respectively, as compared with the normal of 10 micrograms. During treatment with large amounts of an extract of the urine of pregnant women for six months or more there was slight enlargement of the penis and increase in erections in two cases. In one case such treatment was accompanied by definite advances in sexual development at the age of 29, similar to the changes observed in normal boys at puberty; whether these changes were coincidental in this instance or were brought about by the treatment cannot be determined. Psychiatric study revealed nothing characteristic for the group. One patient could be classified as of dull normal intelligence, on the basis of an intelligence quotient of 83 in the Stanford-Binet test. In the remaining cases the intelligence ranged from this point to the intellectual capacity

required for successful college and professional work. The personalities of the patients varied from that of an active, energetic, popular, friendly, successful professional man to that of a quiet, withdrawn, sensitive shy, self-conscious person or of an overfastidious, perfectionistic, pious, ambitious, quiet, reserved man who suffered keenly from his physical inferiority to the point of feelings of reference, depression and suicidal thoughts and who tried to solve his problems finally by seeking refuge in training for the priesthood. The six patients sought treatment voluntarily. It is suggested that psychoanalysis of eunuchoid patients may prove an important contribution to an understanding of the relation of the endocrine glands to mental disorders.

Endocrinology, Los Angeles

29: 393-534 (Oct.) 1938

*Endocrine Theories of Dysmenorrhea. C. F. Fluhmann, San Francisco. —p. 393.
Hormone and Electrolyte Studies of Patients with Hyperadrenocortical Syndrome (Cushing's Syndrome). Evelyn Anderson, W. Haymaker and M. Joseph, Berkeley and San Francisco.—p. 398.
Oral Therapy in Adrenal Insufficiency: Efficacy of Concentrated Adrenal Cortical Extract Preserved in Glycerol. G. W. Thorn, K. Emerson Jr. and H. Eisenberg, Baltimore.—p. 403.
Effect of Thyroxine on Extent of Regeneration in Enucleated Adrenal Gland of the Rat. D. J. Ingle and G. M. Higgins, Rochester, Minn. —p. 419.
Effect of Administration of Carbon Tetrachloride on Extent of Regeneration in Enucleated Adrenal Gland of the Rat. G. M. Higgins and D. J. Ingle, Rochester, Minn.—p. 424.
Chick Thyroid Response as a Basis for Thyrotropic Hormone Assay. G. K. Smelser, New York.—p. 429.
Urinary Thyrotropic Hormone. K. Emerson Jr. and W. C. Cutting, Baltimore.—p. 439.
Effect on Growth Rate of Thyroparathyroidectomy in Newborn Rats and of Subsequent Administration of Thyroid, Parathyroid and Anterior Hypophysis. Theodora Nussmann Salmon, New York.—p. 446.
Effect of Long-Term Injections of Testosterone on Guinea Pig Endometrium. Doris Phelps, J. C. Burch and E. T. Ellison, Nashville, Tenn.—p. 458.
Excretion and Fate of Androgens: II. Concerning Conversion of Androgens to Estrogens. C. D. Kochakian, Rochester, N. Y.—p. 463.
The Physiologic Response of Ocular Transplants of Seminal Vesicle in Female Rabbits. R. H. Melchionna and Sarah Flanders, New York. —p. 468.
*Inhibition of Lactation During Puerperium by Testosterone Propionate. R. Kurzrok and C. P. O'Connell, New York.—p. 476.
Iodoquacin of Estradiol Substitution in Ovariectomized Albino Rats. H. Lausen, C. G. Heller and E. L. Sevringhaus, Madison, Wis.—p. 479.
Skeletal Changes and Blood Serum Calcium Level in Pigeons Receiving Estrogens. C. A. Pfeiffer and W. U. Gardner, New Haven, Conn.—p. 485.
Study of Estrogenic Content of Tissues in Pregnancy. F. Parker Jr. and B. Tenney Jr., Boston.—p. 492.
Effect of Estrin on Gonad-Stimulating Complex of Anterior Pituitary of Parabiotic Rats. E. Bunster and R. K. Meyer, Rochester, N. Y. —p. 496.
Effect of Antuitrin-S on Thymus of Young Albino Rat. E. O. Butcher and E. C. Perrin Jr., Clinton, N. Y.—p. 501.

Endocrine Theories of Dysmenorrhea.—In studying the problem of dysmenorrhea, Fluhmann determined the estrogenic content of the blood of nineteen women with severe dysmenorrhea. No pelvic or systemic cause for the painful menstruation was found. Eighty-five tests for estrogen were conducted by the mucification test; at least three on each patient were performed at weekly intervals. The blood estrogen of the nineteen patients failed to demonstrate any consistent departure from the normal, either in the amount of estrogen present or in the type of curves obtained. In eleven instances a single peak in the concentration of the substance occurred during the interval and presumably was associated with ovulation. In seven cases the interval rise was present, but a secondary increase also was noted at about the time of menstruation. The only abnormal observation was in a young woman of 19, in whom there was a definite increase of estrogen at the time of menstruation and no peak during the interval. There are serious objections to accepting any of the theories (deficiency of estrogen, excess of estrogen or deficiency of progestin and overactivity of progestin) which seek to explain the cause of primary dysmenorrhea solely as a hormone deficiency or excess.

Inhibition of Lactation.—Kurzrok and O'Connell injected twenty-one successive patients, in whom it was decided to terminate lactation, with testosterone propionate. The total dose ranged from 50 to 150 mg. Two doses were given daily for one or more days and all injections were made deep in the gluteal region. The effect in only two instances was considered unsuccessful; one patient was completely relieved of symptoms on the fourth day and the other patient was injected with a total of 75 mg. of testosterone propionate divided into three doses. In the latter case the first injection was given on the first day post partum. The symptoms of pain, fulness and engorgement of the breasts were not relieved. In view of the fact that lactation usually begins on the fourth day post partum the inhibitory effect of testosterone propionate might have been exerted a little too early in this case. The results were excellent in the remaining nineteen cases. It was not unusual to find that, when doses of 25 mg. were given, complete relief of all symptoms was obtained within a few hours after the second dose (eight hours after the first dose). In general, 40 mg. or more of testosterone propionate was required to relieve all symptoms of engorgement of the breast. Complete relief of symptoms usually occurred within forty-eight hours. The best results were obtained from doses of 25 mg. each. Once the symptoms were relieved there was no tendency for their recurrence after the injections were stopped. There were no unpleasant by-effects from the treatment. The normal character of the lochia was not changed. No after-pains were produced. The onset of the first menstrual period was not delayed.

Florida Medical Association Journal, Jacksonville

25: 157-212 (Oct.) 1938

Quinine Amblyopia in Children. L. W. Holloway, Jacksonville.—p. 167.
Abdominal Auscultation. J. H. Pound, Tallahassee.—p. 173.
Malaria. M. M. Harrison, Bradenton.—p. 175.
Peroral Endoscopy: Report of Cases. C. J. Heinberg, Pensacola.—p. 179.
The Final Responsibility of Public Health Rests on the Medical Profession. A. B. McCreary, Jacksonville.—p. 181.

Georgia Medical Association Journal, Atlanta

27: 377-418 (Oct.) 1938

Urologic Conditions in Childhood. W. P. Jordan, Columbus.—p. 377.
The Conservative Treatment of Chronic Pyelonephritis: A Brief Summary. S. T. Brown, Atlanta.—p. 380.
Combined Sulfanilamide and Local Treatment of Gonococcic Infections. S. J. Sinkoe, Atlanta.—p. 382.
The Management of Ureteral Calculi in Ambulatory Patients. M. F. Fowler and W. L. Champion, Atlanta.—p. 387.
Hernia of the Urinary Bladder: Report of Cases. J. A. Hunnicutt Jr., Athens.—p. 393.
Progress of Medicine in Georgia. G. A. Trayler, Augusta.—p. 398.
House of Delegates of the A. M. A. Considers National Health Program. C. W. Roberts, Atlanta.—p. 405.

Journal of Bone and Joint Surgery, Boston

20: 825-1126 (Oct.) 1938. Partial Index

Treatment of Scoliosis by Wedging Jacket and Spine Fusion: Review of 265 Cases. A. D. Smith, F. L. Butte and A. B. Ferguson, New York. —p. 825.
Correction of Extreme Flexion Contracture of Knee Joint. S. L. Haas, San Francisco.—p. 839.
*Sciatic Pain of Unknown Origin: Effective Method of Treatment. G. E. Haggart, Boston.—p. 851.
Scalenus Anterior Muscle in Relation to Shoulder and Arm Pain. J. A. Freiberg, Cincinnati.—p. 860.
Giant-Cell Tumor of Bone. B. L. Coley and N. L. Higinbotham, New York.—p. 870.
Primary Hemangioma Involving Bones of Extremities. C. F. Geschickter and I. H. Maueritz, Baltimore.—p. 888.
Bone Block for Painful Hips. J. B. L'Episcopo, Brooklyn.—p. 901.
The Healing of Joint Fractures: Clinical and Experimental Study. K. O. Haldeman, San Francisco.—p. 912.
Operative Technic for Hallux Valgus. M. A. Levine, Los Angeles.—p. 923.
Recurrent Anterior Dislocation of Shoulder: Report of Eleven Cases Operated on by Method of Roberts. B. S. Burnet, Hot Springs National Park, Ark.—p. 936.
Results of Treatment of Osteogenic Sarcoma. H. W. Meyerding, Rochester, Minn.—p. 933.
Roentgentherapy in Acute Osteoporosis: New Type of Treatment. E. B. Mumford, Indianapolis.—p. 949.
Clinical and Anatomic Study of Semimembranosus Bursa in Relation to Popliteal Cyst. P. D. Wilson, A. L. Eyre-Brook and J. D. Francis, New York.—p. 963.
*Gas Bacillus Infection as Complication of Fractures. D. M. Bosworth, New York.—p. 985.
Backache: Manipulative Treatment Without Anesthesia. F. A. Jones, St. Louis.—p. 990.
The Opera-Glass Hand in Chronic Arthritis: "La Main en Lorgnette" of Marie and Léri. L. S. Nelson, Brooklyn.—p. 1045.

Sciatic Pain of Unknown Origin.—Haggart outlines a method of treating sciatic pain that he has employed successfully in the treatment of seventy patients with sciatica of unknown origin. The method is also applicable for immediate

relief of severe sciatic pain while a clinical study is being made to determine the cause. The method is a combination of two, and in some instances of three, procedures: (1) perineural injection of the sciatic nerve with a 1 per cent solution of procaine hydrochloride with 2 drops of 1:1,000 epinephrine to the ounce, (2) traction to the affected extremity by the Russell method and (3) in an increasing number of cases manipulation of the lower part of the back under intravenous sodium ethyl (1 methylbutyl) thiobarbiturate anesthesia. The objective of the injection, 50 cc., of the procaine hydrochloride is to surround the sciatic nerve with the solution and possibly also to inject its sheath. In addition, the fascia and substance of the piriformis muscle, and in some instances the posterior sacro-iliac ligament, are thoroughly infiltrated. Following injection and manipulation, with or without traction, all patients are instructed in muscular exercise of the lower part of the back and of the gluteal muscles. When the patients become ambulatory, posture training also is given as indicated. Intensive heat and massage are likewise utilized, chiefly applied to the lower part of the back, the region of the buttocks and the upper part of the thigh. Hot fomentations and infra-red rays have been the most effective forms of heat. Of the seventy-five patients, all but ten obtained immediate relief of pain. Thirteen were benefited temporarily for from three to six months. Ten patients were free of symptoms for one year and then did not return or answer follow-up letters. In thirty-eight cases it was eventually possible to make a definite diagnosis and so determine the cause of the sciatica and advise appropriate treatment.

Gas Bacillus Infection as Complication of Fractures.—Bosworth states that prophylaxis with both gas bacillus and tetanus antiserum should be the rule in all cases of compound fracture. Amputation should never be done for acute gas bacillus infection, although it may be necessary later because of deformity. Repeated massive doses of intravenous polyvalent serum should be continued until the infection is controlled. Drainage but not débridement should be instituted. Many tissues first thought to be dead will later be found viable. Roentgen therapy may yet prove to be of the greatest help. Orr dressings and treatment may be safely carried out as in any other infection of the bone, once the acute gas bacillus infection has been brought under control, without regard to the presence of Bacillus welchii and its associates which remain lying apparently inert in the wound.

Journal of Lab. and Clinical Medicine, St. Louis

24: 1-110 (Oct.) 1938

Differential Serum Vanadate Sedimentation Reaction. H. B. Hunt and D. L. Woodhouse, Birmingham, England.—p. 1.
Trichostrongylus Colubriformis in the Human Appendix: Report of Case in Louisiana. J. R. Schenken and E. S. Moss, New Orleans.—p. 15.
*Massive Doses of Vitamin D in Chronic Arthritis: Its Effect on Calcium Metabolism. C. L. Steinberg, Rochester, N. Y.—p. 17.
Studies on Anemia of Pregnancy in Gastrectomized and Normal Dogs. R. A. Bussabarger, F. F. Cuthbert and A. C. Ivy, Chicago.—p. 24.
Tularemia Following Injury While Performing Postmortem Examination on Human Case: Report of Postmortem Findings in Case of Pulmonic Type of Tularemia. J. O. Weilbaecher Jr. and E. S. Moss, New Orleans.—p. 34.
Difference in Growth of Pathogenic Fungi with Variation of Medium and Oxygen Tension. J. W. Williams, Cambridge, Mass.—p. 39.
Physiologic Response of Pleural Surfaces to Implanted Dusts. W. R. Bradley and M. W. First, Detroit.—p. 44.
*Seasonal and Regional Factors in Acute Rheumatic Fever and Rheumatic Heart Disease. C. A. Mills, Cincinnati.—p. 53.
Essential Hypertension of More Than Twenty-Five Years' Duration Showing No Renal Arteriolar Changes at Autopsy: Report of Case. S. Shapiro, New York.—p. 60.
Effect of Liver Extract on Polycythemia Vera. R. H. Major, Kansas City, Kan.—p. 65.
Reduction of Prontosil Soluble by Urine. J. V. Scudi, New York.—p. 68.
Culture versus Guinea Pig Inoculation in Diagnosis of Tuberculosis. W. A. Murphy and Dorothy Rhoades Duerschner, New York.—p. 70.
Test for Occult Blood. E. Redowitz, Philadelphia.—p. 95.
Methemoglobin Determination: Clinical Method. W. B. Wendel, Memphis, Tenn.—p. 96.

Vitamin D in Chronic Arthritis.—Steinberg studied the clinical effects of massive doses of vitamin D in the treatment of chronic arthritis and its possible effect on the blood calcium. He administered the vitamin in doses of 160,000 U. S. P. units daily to forty patients with chronic arthritis. Fourteen showed clinical improvement and twenty-six showed no improvement; the condition of three of the latter group was definitely aggravated. The serum calcium and phosphorus levels of thirty-two patients were determined and it was found that massive doses of vitamin D will lower a high serum calcium; it will raise a low or normal serum calcium to a higher level and further continued administration, will again decrease the [illegible] calcium level. The clinical improvement or nonimprovement or even aggravation of existing joint symptoms had no bearing on the change of blood calcium. The effect on the serum phosphorus was less marked. The effect of massive doses of vitamin D in chronic arthritis is nonspecific and the occasional improvement following its use is similar to that of the many other remedies employed in its nonspecific treatment. Even though the author feels that no specific virtues exist in such medication, at the same time he believes that its toxicity has been overemphasized, but he does not mean to imply that larger doses than he employed may not be dangerous or even fatal.

Climatic Factors in Acute Rheumatic Fever.—Mills presents evidence which indicates that some factor concerned with the movement of major storm areas over the earth's surface exerts a dominant influence in determining the incidence of rheumatic attacks. Attacks of rheumatic fever and rheumatic cardiac disease occur from ten to twenty times more often in the worst areas of the storm zones than in the calm warmth of the tropics. In northern countries their difference in incidence between winter high and summer low is almost as striking as is the regional one. Those afflicted in the North usually show improvement in symptoms on migration to subtropical regions. Such improvement is soon lost when they again experience the northern winter and early spring weather. For lasting benefit they must forego living in the stormy North and take up permanent residence in the subtropics. The more even seasonal distribution of attacks of rheumatic fever between summer and winter in Buenos Aires, reported by Coburn, is of some significance in establishing the etiologic importance of atmospheric instability, especially when such storminess is associated with lower temperatures. When a permanent change of residence is possible the choice region from a climatic point of view in this country is the southern parts of New Mexico, Arizona and California.

Journal-Lancet, Minneapolis

58: 427-464 (Oct.) 1938

The Value of Roentgen Rays in Diagnosis. C. G. Sutherland, Rochester, Minn.—p. 427.
Treatment of Gonorrhea with Sulfanilamide. D. E. Ellison, Minneapolis.—p. 433.
The Needs of the Tuberculous. H. E. Hilleboe, St. Paul.—p. 440.
*Pulmonary Embolism: Report of Fifty-Four Cases. P. J. Breslich, Minot, N. D.—p. 445.
Obstetric Syphilis. E. D. Plass, Iowa City.—p. 449.

Pulmonary Embolism.—Breslich reports fifty-four cases of pulmonary embolism that were found in the 457 postmortem examinations performed from June 1932 to December 1936. Of these, thirty-seven were in medical and seventeen in surgical patients. In 51 per cent of the cases the emboli were associated with lung infarcts. Only three of the thirty-seven patients in the medical group were 40 years of age or less, twelve of whom were definitely obese, eighteen of normal weight and seven emaciated. The leukocyte counts were elevated in twenty-six instances, also there was some degree of fever during the period of hospitalization. Fever and leukocytosis were present in four patients with recent myocardial infarcts and in two with an inoperable carcinoma. In twelve there were obvious suppurative lesions. In the remaining eight instances the occurrence of fever and leukocytosis prior to infarction of the lung or hypostatic bronchopneumonia was not explained. In only five of the thirty-seven cases were the hearts considered normal at postmortem examination. There were only three sudden deaths due to massive pulmonary embolism in the entire group. In twenty-one of the thirty-seven medical cases lung infarcts were present and associated with small emboli, in nineteen of which there was unmistakable postmortem evidence of cardiac decompensation. Venous thrombi which indicated a possible source of pulmonary emboli were discovered in twenty-six instances. Most of the venous thrombi caused no local symptoms, and in only five cases were they recognized before death. Other recognized sources of emboli were thrombi in the left cubital vein, right subclavian vein and veins of the left thigh in one instance

each. In twenty-one patients with pulmonary infarcts, clinical signs were sufficient to make a diagnosis only eleven times. Several of these were thought to be instances of bronchopneumonia before death. In the remaining ten cases pulmonary infarcts caused no symptoms and were discovered only at postmortem examination. Of the seventeen surgical patients who died following operation thirteen were definitely obese, two of normal weight and two emaciated. Twelve of the patients were more than 50 years of age, four were 40 years of age or less and one was in the fifth decade. In nine there was either a marked hypertrophy of the myocardium of the left ventricle suggesting previous arterial hypertension or serious coronary artery sclerosis or both. There was one instance of acute myocarditis. In seven cases the heart was considered normal at postmortem examination. Lung infarcts were present in seven, and in five of them there were pathologic changes in the heart resulting from arterial hypertension and coronary artery sclerosis. Thirteen patients died suddenly of massive pulmonary embolism, during convalescence from operations involving the abdomen, pelvis or abdominal wall. Death occurred from two to 111 days after operation, but there were eleven deaths in the first three postoperative weeks. In six of these thirteen cases thrombi were discovered in the pelvic or leg veins. In the other seven cases blood clots became detached from the lining of the veins in their entirety and left no trace of their source. In seven of the seventeen surgical cases extensive, acute or chronic inflammatory lesions other than terminal bronchopneumonia were present at the time of death. Three of the seven showed hypertensive cardiovascular disease with sclerosis of the coronary arteries, while in the others the hearts were normal. Three of the seventeen patients had carcinoma, and in one of these acute myocarditis was discovered at necropsy. In the other two the hearts were normal.

Journal of Pediatrics, St. Louis

13: 455-618 (Oct.) 1938

Tonic Neck Reflex in the Human Infant: Morphogenetic and Clinical Significance. A. Gesell, New Haven, Conn.—p. 455.
*Use of Honey as Carbohydrate in Infant Feeding. F. W. Schlutz and Elizabeth M. Knott, Chicago.—p. 465.
Statistical Studies on Prematurity: I. Incidence of Prematurity and Effect of Certain Obstetric Factors. C. H. Peckham, Baltimore.—p. 474.
Id.: II. Mortality of Prematurity and Effect of Certain Obstetric Factors. C. H. Peckham, Baltimore.—p. 484.
Influence of Metabolism on Teeth. J. O. McCall and Frances Krasnow, New York.—p. 498.
Biophotometer as Test for Vitamin A Deficiency. C. E. Snelling, Toronto.—p. 506.
New Tuberculin Patch Test. W. D. Steward, Chattanooga, Tenn.—p. 510.
Relation of Intestinal Bleeding to Heterotopic Gastric Mucosa and Ulceration in Meckel's Diverticulum. A. L. Abrams, New York.—p. 513.
Nervous System in Acrodynia: Review of Literature and Report of Case. A. J. Lubin and H. K. Faber, San Francisco.—p. 515.
*Sulfanilamide in Treatment of Gonorrheal Ophthalmia in Children. M. W. Michels, Detroit.—p. 527.
Rupture of Liver in the Newborn Infant. H. B. Silver, Newark, N. J.—p. 542.
Congenital Absence of Teeth: Absent Deciduous and Permanent Right and Left Central and Lateral Incisors and Canines of Lower Jaw. J. L. Stein and A. Gerber, Brooklyn.—p. 547.
Methyl Salicylate Poisoning in an Infant: Report of a Patient with Partial Necropsy. A. Elmas, Bridgeport, Conn.—p. 550.

Honey in Infant Feeding.—Schlutz and Knott studied the suitability of honey as the source of carbohydrate for ten healthy male infants aged 1 month or less. The period of observation continued until the infants were 6 months old. Formulas for all infants were restricted to either evaporated or dried milk and carbohydrate, with additional supplements of pure vitamin or mineral solutions. The general well being of the infant, the number of stools daily and weight gains have been used to determine the value of honey in regular feedings. Besides these criteria, blood sugar tolerance studies have been employed to contrast the response to honey with that resulting from administration of other common sources of carbohydrate. It was found that honey is easily digested, being absorbed more rapidly than most sugars during the first fifteen minutes after ingestion. It is well tolerated by the infant and does not cause diarrhea. It may facilitate weight gains, since there was a slight tendency for greater average gains daily to occur on lower calory intakes when honey was included in the formulas. It appears that honey should be recommended for wider use in diets of infants.

Sulfanilamide in Gonorrheal Ophthalmia.—Michels used sulfanilamide orally in the treatment of fifteen cases of proved gonorrheal ophthalmia. Sulfanilamide was given on the approximate dosage basis of 1 grain (0.065 Gm.) per pound of body weight daily combined with equal amounts of sodium bicarbonate. The average hospital duration of the fifteen patients was 5.8 days. The ages of the patients varied from 5 days to 3 years. Of these, two showed corneal involvement; perforation did not result after sulfanilamide was started. Six of the group showed bilateral involvement. None of the complications attributed to sulfanilamide were observed in these patients. In the two years prior to the use of sulfanilamide in the thirty-two similar cases treated for gonorrheal ophthalmia by the usual methods the average hospital duration was 28.5 days. Corneal involvement occurred in two cases, two going on to perforation. Eighteen patients had involvement of both eyes. Four other patients treated by sterile milk were hospitalized for an average of 16.5 days; none of these showed corneal involvement.

Maine Medical Journal, Portland

29: 203-234 (Oct.) 1938

Care of the Indigent Sick in the State of Maine. G. W. Leadbetter, Augusta.—p. 203.

Medical Annals of District of Columbia, Washington

7: 307-334 (Oct.) 1938

Asphyxia of the Newborn. H. R. Litchfield and J. S. Reilly, Brooklyn.—p. 307.
Progress, Science and the Mind: A History of Saint Elizabeths Hospital. J. P. H. Murphy, Washington.—p. 313.
Cranial Osteomyelitis: Report of Two Unusual Cases. J. Rose, M. M. Schapiro and E. P. McLarney, Washington.—p. 323.
Barium Enema as Most Accurate Procedure in Diagnosis of Pathology of the Colon. C. Moore, Washington.—p. 325.

Michigan State Medical Society Journal, Lansing

37: 861-956 (Oct.) 1938

Problems of Medical Care Facing the Medical Profession. H. Cook, Flint.—p. 879.
The Early Treatment of Mental Disorders. W. Overholser, Washington, D. C.—p. 883.
The Lie Detector: Its History and Development. J. A. Larson, Detroit.—p. 893.
The Medicolegal Aspects of the Polygraph or "Lie Detector." L. S. Selling, Detroit.—p. 897.
Desensitization Treatment in Skin Diseases. G. L. Waldbott, Detroit.—p. 901.
Management of Circulatory Failure. L. M. Warfield, Milwaukee.—p. 905.
Punch Card Code for Classification of Craniocerebral Injuries. F. Schreiber and A. Nielsen, Detroit.—p. 909.
Palliative Surgery in Carcinoma of the Stomach. C. F. Vale, Detroit.—p. 912.
Chronic Encephalitis. R. N. De Jong, Ann Arbor.—p. 916.
*Acute Yellow Atrophy of the Liver Caused by Poisonous Mushrooms: Report of Cases. J. H. Ahronheim, Jackson.—p. 921.

Atrophy of Liver from Mushrooms.—Ahronheim reports a case of acute yellow atrophy of the liver due to the ingestion of poisonous mushrooms (Amanita phalloides). Besides the changes in the liver, a marked hemorrhagic diathesis and degenerative fatty changes in the kidneys and myocardium were found at necropsy. The complete recovery of the patient's wife, in spite of more severe symptoms, indicates that in her case the principal effect of the toxic substance was outside the liver, probably in the intestinal tract only.

Military Surgeon, Washington, D. C.

83: 193-272 (Sept.) 1938

Medical Units in the National Guard. A. H. Blanding.—p. 193.
Management of Eye Wounds at the Front. R. A. Fenton.—p. 195.
Penetrating Wounds of Chest, with Report of Case, Gunshot Wound. J. R. Weisner.—p. 202.
Control of Venereal Disease in the United States Army. W. W. Vaughan.—p. 208.
Saint Elizabeths Hospital. E. H. Parsons and Winfred Overholser.—p. 227.
The First Annual Military Medicodental Training Course for Medical Department Reserve Officers, Chicago, Ill. C. C. MacLane.—p. 235.
*Simple Treatment for Epidermophytosis of Feet. J. A. Melody.—p. 250.

Treatment for Epidermophytosis of Feet.—In the treatment of epidermophytosis of the feet Melody instructs his patients not to use soap and water for bathing them but olive oil during the period of treatment. The patient soaks his feet for twenty minutes in a solution containing two tablespoonfuls

of sodium hyposulfite to 2 quarts of water. Following this his feet are thoroughly dried and then exposed for a period varying from five to seven minutes to the actinic rays at a distance of about 18 inches. While the feet are thus exposed the toes are separated so that the rays can penetrate thoroughly into the spaces between and under them. At the completion of the treatment, the feet are thoroughly dusted with a carefully compounded, semianhydrous dusting powder of desiccated sodium thiosulfate enhanced by the synergistic action of thymol and an acceptable base of starch and boric acid with oil of absinthium as a deodorant and the patient is instructed to put on clean socks. Prior to putting on shoes, preferably new, the powder is dusted freely over their entire inner surfaces. The patient is then instructed that prior to retiring he is to remove the socks which he had worn during the day, dust the feet thoroughly with the powder and put on a pair of clean socks and wear them during the night. In the morning he is to change his socks for a clean pair and have another pair with him when he reports for treatment. This routine is followed daily. The average time consumed for the treatment is about two weeks. Twenty-two patients have been treated and all have responded favorably.

Minnesota Medicine, St. Paul

21: 671-744 (Oct.) 1938

The Social Side of Medical Progress. H. W. Haggard, New Haven, Conn.—p. 671.
Medicine and the Law. J. M. Gallagher, Waseca.—p. 677.
Professional Cooperation in the Public Interest. S. B. Houck, Minneapolis.—p. 680.
Herman M. Johnson: Past and Present Medical Problems. E. A. Benson, St. Paul.—p. 684.
Fractures—General Principles. C. Jacobson, Chisholm.—p. 688.
Recognition and Treatment of Refractive Errors in Children. E. Jackson, Denver.—p. 692.

New England Journal of Medicine, Boston

219: 503-546 (Oct. 6) 1938

*The Oral Aspects of Diabetes Mellitus. A. Rudy and M. M. Cohen, Boston.—p. 503.
The Maximal Temperature of Expired Air as a Rapid Measure of Human Body Temperature. F. G. Benedict, Cornelia G. Benedict, R. C. Lee and Helen B. Lee, Boston.—p. 509.
Chronic Arthritis of the Shoulder: Diagnosis and Treatment. J. G. Kuhns, Boston.—p. 516.
Treatment of Chronic Bronchial Asthma. E. A. Brown, Boston.—p. 520.
Progress in Nutrition. F. L. Burnett, Boston.—p. 524.

Oral Aspects of Diabetes Mellitus.—Rudy and Cohen studied the oral manifestations of 403 diabetic patients. Of the patients studied, 138 were advanced in years, presenting edentulous mouths and as a result no dental treatment was necessary. Among the remaining 265 were four children and three young adults who had diabetes of long standing. In six of these the teeth were excellent from the functional point of view, with comparatively few carious teeth and no abnormal tartar formation. In the younger children the eruption of the permanent teeth was normal and in the right relation to their ages. Two of the children who presented normal mouths clinically had incipient parodontal lesions. The seventh patient, a young man with severe diabetes, receiving 68 units of insulin a day, had many carious teeth. He had gingival and parietal abscesses on two occasions, when the diabetes became uncontrolled because of dietary indiscretion or inadequate insulin dosage. As a general rule the adult, dentulous, medically controlled patients who were examined presented mouths which were unclean, owing to lack of oral hygiene, with heavy deposits of both supragingival and subgingival calculus. Roentgenographically and clinically this group has a high incidence of diffuse alveolar atrophy. This is particularly true of the younger age group (25 to 45), in which diffuse alveolar atrophy is not generally attributed to local causes. Patients with acute or inadequately treated diabetes present a characteristic oral symptomatology. It is manifested clinically in the gingival papillae, which become markedly swollen and tender and bleed profusely on the slightest pressure. These patients also present loosening of the teeth. This is associated with pain, especially on percussion. With control of the diabetes the acute inflammatory condition of the gingiva subsides, the loosened teeth become fixed and pain on percussion disappears. Extraction of teeth in the inadequately controlled diabetic patient results in a prolonged period of suppuration and pain. Local treatment without attention to the diabetes is futile. Infected teeth may aggravate the diabetes and should therefore be removed. Extraction of teeth should be carried out only on controlled diabetic patients and under the supervision of a physician. Neglect may result in serious complications.

New Orleans Medical and Surgical Journal

91: 163-210 (Oct.) 1938

Insulin Allergy: Report of Severe Case with Successful Desensitization. A. A. Herold, Shreveport, La.—p. 163.
Causes of Blindness in Louisiana: Review of 700 Cases. H. F. Brewster, New Orleans.—p. 166.
The Eye and Ear in Industrial and Social Life. D. Bean, Shreveport, La.—p. 173.
The Symptoms, Diagnosis and Treatment of Carcinoma of the Rectum and Sigmoid Colon. B. C. Garrett and L. L. Davidge, Shreveport, La.—p. 177.
Neoplasia of Testes. F. L. Loria, New Orleans.—p. 187.
Banana and Banana Powder Therapy in Diarrheal Diseases of Infants and Young Children. E. A. Sorels, New Orleans.—p. 192.
Urinary Infections and Their Management. I. B. Rougon, Shreveport, La.—p. 196.

Oklahoma State Medical Assn. Journal, McAlester

31: 333-366 (Oct.) 1938

Analysis of 1,514 Inguinal Herniotomies. W. P. Fite, Muskogee.—p. 333.
Surgical Diseases of Gallbladder and Bile Ducts. D. L. Garrett, Tulsa.—p. 338.
Actinomycosis in Man: Case. W. H. Bailey, Oklahoma City.—p. 339.
Thoracoplasty in Treatment of Tuberculosis. R. M. Shepard, Tulsa.—p. 342.
Acute Infective Laryngotracheobronchitis. C. M. Pounders, Oklahoma City.—p. 344.

Public Health Reports, Washington, D. C.

53: 1817-1854 (Oct. 14) 1938

Effect of Sodium Selenite and Selenate on Oxygen Consumption of Mammalian Tissues. C. I. Wright.—p. 1825.
Assay of Urine in Canine Blacktongue by the Use of Shigella Paradysenteriae (Sonne). H. F. Fraser, N. H. Topping and W. H. Sebrell.—p. 1836.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

46: 513-566 (Oct.) 1938

Smooth Muscle Tumors of Stomach: Review of Literature with Report of Case (Leiomyosarcoma). L. Chaffin, Los Angeles.—p. 513.
Giant-Cell Tumor of the Patella: Case Report. R. B. Dillehunt and E. G. Chuinard, Portland, Ore.—p. 525.
Multiple Ectopic Parathyroid Adenomas. G. S. Fahrni, Winnipeg, Man.—p. 528.
Aminin—Unilateral Fascial Emotional Palsy, as Sign of Destructive Contralateral Thalamostriate Lesions. A. J. McLean, Portland, Ore.—p. 533.
Mesenteric Infarction Due to Thrombosis of Mesenteric Vessels Causing Chronic Intestinal Obstruction: Case Report. T. Shinkawa and N. Mori, Nagoya, Japan.—p. 545.
Carcinoma of Breast with Krukenberg Type Metastasis: Report of Case. C. P. Larson, Tacoma, Wash.—p. 550.
*Blood Calcium: Its Relation to Certain So-Called Angiospastic Conditions. G. F. Norman, San Francisco.—p. 553.

Blood Calcium and Angiospasm.—In 1934 Norman described a peculiar relationship between mild hypocalcemia and idiopathic migraine including the report of a few cases exhibiting convulsive seizures. Vascular spasm was accepted to explain the phenomena observed. This concept has now been extended to designate a preexisting localized vascular irritability probably operative through the sympathetic nervous system and inhibited normally by an adequate level of ionized calcium in the blood. A few patients exhibiting the Raynaud complex in moderate degree, either in association with migraine or independent of this condition, could be segregated into the same group. Close questioning will reveal the frequency of blanching fingers and paresthesias in a large group of patients and the association with migraine is quite striking. The author's series now includes about 200 patients from private practice complaining of biliousness or sick headache with nausea and vomiting, and the results have justified the employment of viosterol to raise the blood calcium. A large percentage of cures has been obtained with no other form of treatment. In the small ratio not completely relieved, a diminution of both frequency and severity of the attacks has occurred, frequently persisting for six months after interruption of the therapy.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Australian J. Exper. Biol. & M. Science, Adelaide

16: 193-274 (Sept.) 1938. Partial Index

Myxoma and the Shope Fibroma: V. Myxoma in Fibroma-Immune Rabbit, with Summary of Present Knowledge of Relationship Between Myxoma and Fibroma Viruses. E. W. Hurst.—p. 205.
Tissue Culture of the Rickettsia of Q Fever. F. M. Burnet.—p. 219.
Infection of Central Nervous System by Louping Ill Virus: Investigation by Quantitative Egg Membrane Technic. F. M. Burnet and Dora Lush.—p. 233.
The Polynuclear Count in the Australian Aborigine. B. Maegraith. —p. 241.
Susceptibility of the Dog to Q Fever. E. H. Derrick, D. W. Johnson, D. J. W. Smith and H. E. Brown.—p. 245.
Liberation of Histamine by Staphylococcus Toxin and Mercuric Chloride. W. Feldberg and C. H. Kellaway.—p. 249.
Influenza Virus on the Developing Egg: VIII. Comparison of Two Antigenically Dissimilar Strains of Human Influenza Virus After Full Adaptation to the Egg Membrane. F. M. Burnet and Dora Lush. —p. 261.

British Journal of Dermatology and Syphilis, London

50: 487-574 (Oct.) 1938

The British Journal of Dermatology and Syphilis, 1888-1938: A Retrospect. J. M. H. Macleod.—p. 487.
Looking Backward. J. H. Sequeira.—p. 498.
Celebrated British Dermatologists of the Past Fifty Years. E. Graham-Little.—p. 503.
Dermatomyositis and Poikilodermia Atrophicans Vascularis: Clinical and Histologic Comparison. G. B. Dowling and W. Freudenthal.—p. 519.
Emulsifying Bases in Dermatology. P. B. Mumford.—p. 540.

British Journal of Radiology, London

11: 641-704 (Oct.) 1938

Epidermal Tumors of Skin. I. G. Williams.—p. 641.
Carcinoma of Cecum Causing Intussusception, with Special Reference to Roentgenologic Features: Case. A. G. G. Melville.—p. 649.
*Radiotherapeutic Treatment of Certain Granulomas. R. McWhirter.—p. 664.
Peptic Ulcer of Greater Curvature of the Stomach. F. S. P. van Buchem.—p. 667.
Symptomless Pericarditis: Report of Two Cases. E. L. Rubin and M. H. Pappworth.—p. 671.
X-Ray and Gamma-Ray Protective Values of Building Materials. G. W. C. Kaye, W. Binks and G. E. Bell.—p. 676.
Existence of Critical Intensity. W. H. Love.—p. 686.

Roentgen Treatment of Granuloma.—McWhirter divides the granulomas into three groups: actinomycosis in which the diagnosis is established by demonstrating the ray fungus in the discharge, granuloma of the vulva and anus associated with venereal disease, and a group of granulomas in which a causal organism cannot be determined. He has encountered fifteen cases of actinomycosis in the last three years. In the earlier cases treatment with x-rays was generated at 180 kilovolts and filtered by 0.7 mm. of copper. During the last eighteen months a still harder quality beam (250 kilovolts and Thoraeus filter) has been employed. Daily treatments of about 100 roentgens have been given (the dose is varied according to the site treated, the area of the field and the age of the patient) over a prolonged period and the dose to the lesion carried as high as 4,000 roentgens. The author believes that daily treatments are superior to weekly treatments and considers high dosage advisable in order to prevent recurrence of the suppuration. A hard quality beam would also seem advisable, as many of the lesions extend to a considerable depth. Drainage may be necessary if there is much necrotic débris. Of the lesions treated, seven of the eight affecting the face and neck have healed. The unhealed one is recent. Of the four abdominal lesions, three have healed and there is a small discharging sinus in one which is gradually closing in. Healing has occurred in one of the two cases in which the wall of the chest was involved. The condition has soundly healed in the case in which the buttock was involved. All the patients are alive, in twelve the sinuses have healed completely and in the remaining three there is marked improvement. The lesions of anal and vulvar granulomas are very sensitive to x-rays and may disappear rapidly with a single dose of 300 roentgens. Occasionally this requires to be repeated after an interval of a week. Seven patients with such granulomas have been treated and all are well. Granulomas of unknown origin are serious; four of the seven patients with this type of granuloma are dead. Two others are in poor general health. The seventh patient is fit and well. The mouth, pharynx or neck has been primarily involved in all these cases. The lesions resemble malignant conditions but lack the characteristic induration and are often extensive while yet remaining superficial. In other cases the ulceration has been deep and microscopic examination is necessary to exclude malignant disease. As a rule, the general health of the patient is poor. No fungus has been found in any of the cases. The clinical appearance and history, however, suggest that the condition is produced by a fungous infection.

British Journal of Urology, London

10: 219-322 (Sept.) 1938

Renal Fusion: Urographic Data and Their Clinical Significance. W. F. Braasch and H. J. Hammer.—p. 219.
"Pseudo-Uremia" of Patients with Prostatic Hypertrophy: The Nephrogenous Acidosis. H. Retlev-Abrahamsen and V. Aalkjaer.—p. 231.
Regarding the Cure of Prostatic Hypertrophy with Synthetic Testicular Hormones. A. Oberholtzer.—p. 237.

British Medical Journal, London

2: 729-772 (Oct. 8) 1938

The Modern Decline of Breast Feeding. J. C. Spence.—p. 729.
The Spread of Streptococcic Disease. W. H. Bradley.—p. 733.
*Glucose Tolerance Curves in 500 Obese Cases. D. Embleton.—p. 739.
Corneal Transplantation: Results of a Series of Fifty-Six Operations on Forty-Eight Eyes. J. W. T. Thomas.—p. 740.
*Vitamin C in Treatment of Whooping Cough. D. Gairdner.—p. 742.

Dextrose Tolerance Curves and Obesity.—Embleton reviewed the 500 cases (242 in males and 258 in females) of obesity in which a dextrose tolerance curve was made during the last fifteen years. No examples of gross endocrine disturbance, with the exception of diabetes, are given. It is possible that the series does not represent a fair sample of the obese population of the country, as the patients came from the better-off classes. Only a small proportion have presented themselves because sugar has been found in the urine. The most striking result from the analysis is the difference between the obese of the two sexes. The men show a total of 73 per cent high curves for all ages, whereas the women show only 35 per cent of high curves. This difference in response to dextrose is still more pronounced if the percentage of high curves is plotted for the various decades. In men up to the age of 35 years the percentage of high dextrose tolerance curves is below 30. After this age a sudden rise occurs, so that between 35 and 45 nearly 80 per cent of obese men show a high dextrose tolerance curve, after which this high level is maintained up to the age of 65 and beyond. In obese women, on the other hand, the percentage of high curves remains low until a decade later, 45 years. The rise when it occurs is less sharp, the highest percentage of high curves (70) not being reached until the decade 55 to 65 years. A striking difference is often evident in the postmortem room. An obviously obese woman may be encased in layers of fat, but within this the body appears healthy and the muscles a bright red and not infiltrated with fat. In the male this is rare; if it ever occurs the musculature is heavily infiltrated with fat. A man is more likely to have a high blood sugar curve if he is 50 per cent overweight than if he is even less than 10 per cent overweight. A woman 60 per cent overweight is not more likely to show a high blood sugar curve than one only 10 per cent overweight.

Vitamin C in Treatment of Whooping Cough.—Gairdner used large doses of vitamin C in the treatment of twenty-one children with whooping cough and twenty others served as controls. They were seen as outpatients once a week. Only those patients were included in the series who satisfied one or more (in the majority at least two) of the following diagnostic criteria: (1) Haemophilus pertussis recovered from the cough plate, (2) a typical paroxysmal cough witnessed and (3) a suggestive history combined with the presence of either a sublingual ulcer or a marked lymphocytosis. The dosage adopted was first week 200 mg. daily, second week 150 mg. and third and subsequent weeks 100 mg., given in divided doses. The illness in the treated patients lasted an average of thirty-five days as compared with forty-one days in twenty control patients, a difference which lies within the limits of statistical error. The average

rate of weight gained was practically the same in the two groups. These figures are in keeping with the general clinical impression that there was no striking difference in the course of the disease in the two sets of cases, and the assertion of Ormerod and UnKauf that the paroxysmal period of the disease is shortened "from a matter of weeks to a matter of days" was not confirmed.

Indian Medical Gazette, Calcutta

73: 513-584 (Sept.) 1938

Study of Antituberculosis Activities in the West, with Some Suggestions for a Campaign Against Tuberculosis in India. C. Frimodt-Möller.—p. 513.
Campaign Against Tuberculosis in Italy. T. J. Joseph.—p. 522.
Antituberculosis Work in Bengal. A. C. Uhil.—p. 525.
Seriousness of Tuberculosis in India as Shown by Study of Incidence and Type. P. V. Benjamin.—p. 540.
Deductions from Experience in Tuberculosis Ex-Patients' Colony in India. P. V. Benjamin and R. M. Barton.—p. 545.
Tuberculosis in the Zenana. Rose A. Biste.—p. 551.
Role of Solariums in Antituberculosis Work. B. Jayaram and A. K. Sheriff.—p. 557.
Methods of Destruction of Tubercle Bacilli in Sputum for Use in Indian Homes, with Some Experiments. R. M. Barton.—p. 559.

Irish Journal of Medical Science, Dublin

No. 152: 597-644 (Sept.) 1938

*Clinical Diagnosis of Congenital Heart Disease. P. T. O'Farrell.—p. 597.
Tuberculosis of the Male Genital Tract. E. D. McCrea.—p. 614.
Analeptics and the Bragg-Paul Pulsator. R. H. Micks.—p. 629.

Congenital Heart Disease.—O'Farrell lists the following criteria as helpful in the diagnosis of congenital cardiac disease: 1. A clear history of cardiac disease existing from birth or early infancy (in the absence of infection) is suggestive, but it should be remembered that many cases of congenital cardiac disease do not present recognizable features until fairly well on in life. 2. Murmurs and thrills heard and felt at an unusual situation, and not conforming to those produced by acquired disease as regards both the area of maximal intensity and conventional direction of propagation, deserve close attention. When murmurs originate from congenital lesions they tend in adult patients to be constant throughout life, but in children murmurs may sometimes undergo variation and on rare occasions disappear. 3. Cyanosis is a prominent feature only in the cyanotic forms of congenital cardiac disease. Cyanosis in congenital cardiac disease is due to hindrance of access of the blood to the lungs and the presence of a venous-arterial shunt whereby some of the venous blood is short circuited from the pulmonary into the general circulation. The mechanism of congenital cyanosis nearly always implies the presence of complicated malformations of the heart. The cyanosis is not an expression of congestive failure except as a terminal event, and therefore the concomitant signs and symptoms of congestive failure are lacking. Cyanosis in congenital cardiac disease may be permanent, transient, delayed or paroxysmal, depending roughly on the severity of the lesion; therefore cyanosis is of assistance as a means of assessing prognosis. 4. Polycythemia is seldom if ever seen in the acyanotic group of cases, and it is not a constant feature in the cyanotic group. 5. Clubbing of the fingers and toes is an important sign. The degree of clubbing is roughly proportional to the duration and severity of cyanosis; therefore it is seen most characteristically in well marked chronic cyanotic cases. 6. Dyspnea with respiratory embarrassment varies according to the severity of the lesion. Dyspnea is sometimes paroxysmal and, as in paroxysmal cyanosis, recovery is often rapid. 7. Developmental defects in other parts of the body are not infrequently found in association with congenital cardiac lesions. 8. Subacute bacterial endocarditis occurs frequently. It is more common in the acyanotic group, probably because these patients live longer. 9. Juvenile hypertension is of diagnostic significance only in coarctation of the aorta. 10. X-ray examinations are of great importance provided the observations are correlated with the other clinical manifestations. Many congenital lesions show abnormal alteration of the cardiac outline when viewed under the screen. 11. Electrocardiography will only verify or refute the accuracy of a clinical diagnosis, chiefly in respect to deviation of the electrical axis.

Journal of Mental Science, London

84: 589-892 (Sept.) 1938

The Low-Rate Private Patient and Some Changes. J. R. Gilmour.—p. 596.
Disturbances of Somatic Functions in Catatonia with Periodic Course and Their Compensation. R. Gjessing.—p. 608.
Influence of Pharmacologic Shocks on the Psychoses. M. Sakel.—p. 626.
Observations on Convulsion Therapy with Triazol. A. Walk and W. Mayer-Gross.—p. 637.
Range of Mental Reaction States Influenced by Cardiazol Convulsions. L. C. Cook.—p. 664.
Psychologic Aspects of Insulin Shock Therapy: Psychosomatic Study. E. Larkin.—p. 668.
Insulin and Cardiazol: Experiences of the Combined Method. L. W. Russell.—p. 672.
Dangers and Emergencies of Insulin Therapy of the Psychoses. L. A. Finiefs.—p. 678.
Some Genetic Problems in Mental Deficiency. L. S. Penrose.—p. 693.
Consanguinity and Mental Disorder. T. A. Munro.—p. 708.
Technic and Complications of Insulin Therapy. S. W. Gillman and D. N. Parfitt.—p. 718.
Cardiazol Treatment of Schizophrenia. A. Harris.—p. 735.
Neurologic Manifestations Seen During Cardiazol and Insulin Treatments. D. Blair.—p. 776.
Electro-Encephalogram in Schizophrenia. J. F. MacMahon and W. G. Walter.—p. 781.
Some Observations on Vitamin C Deficiency in Acute Mental Disorder. F. T. Thorpe.—p. 788.
*Homesickness and Immigrant Psychoses: Austrian and German Domestic Servants the Basis of Study. I. Frost.—p. 801.

Nostalgia and Immigrant Psychoses.—In the space of six years Frost saw forty Austrian and German domestic servants suffering from mental disorders. Homesickness combined with loneliness and exhaustion comprise the principal etiologic factors producing psychoses among immigrants. Hereditary elements do not figure prominently. Mistakes of identity are common and illusions of resemblance appear to follow the stratifications peculiar to primitive notions of kinship. The forms of mental disorder encountered in the present series of cases comprise acute confusional states, acute schizophrenic conditions, paraphrenia and involutional forms. Rarely reactive depressive and twilight states occur. Endogenous manic-depressive insanity is rarer still. Bodily reactions may be seen in all the foregoing forms; loss of appetite, toxemia and vegetative-nervous changes are most common and are most likely to be found in the acute confusional and acute schizophrenic types of disorder.

Journal of Tropical Medicine and Hygiene, London

41: 277-292 (Sept. 1) 1938

Smooth and Rough Forms of Monilia Tropicalis Cast in Sputum of the Same Patient. A. Castellani.—p. 277.
Hereditary Transmission of Lymphogranulomatosis Veneres. W. E. Cuneis and Olga Mannetta.—p. 279.
Trypanosomiasis Gambiensis: Some Observations in Uganda and Their Bearing on Prophylaxis. A. A. F. Brown.—p. 281.

41: 293-308 (Sept. 15) 1938

Favorite Sites of Schistosomes and Consideration of Their Destruction in Stock. F. G. Cawston.—p. 293.
*Pellagroid Beriberi (Dermoberiberi). A. Castellani.—p. 294.
Trypanosomiasis Gambiensis: Some Observations in Uganda, and Their Bearing on Prophylaxis. A. A. F. Brown.—p. 296.

Pellagroid Beriberi.—In countries in which beriberi and pellagra are endemic, cases are encountered in which symptoms of the two diseases are present concomitantly. To cover these cases Castellani introduces the term "dermoberiberi" or "pellagroid beriberi." In a typical case of pellagroid beriberi the following features are present: 1. The typical symptoms of beriberi present are weakness and paresis of the lower extremities, loss of the knee jerk, stepping gait, pain in the calves on pressure, patches of anesthesia or hyperesthesia, slight pretibial edema, normal pupils and normal urine. 2. Some of the symptoms of pellagra are chronic roughening and pigmentation of the exposed skin, but at times also of unexposed parts of the body and around the anus. At times stomatitis and angular stomatitis may be present. 3. Keratosis pilaris-like eruption, with numerous, often nonpruriginous, horny papules, which give a feeling of a nutmeg grater, are mostly found on the extensor parts of the legs, thighs and arms (the eruption may be limited to the buttocks and lateral parts of the thighs). This is a well known feature of avitaminosis A. These cases are probably due to a pluriavitaminic deficiency.

Annales de Médecine, Paris

44: 165-312 (Oct.) 1938

Septicopyemia with Bacillus Pseudoliformis. A. Lemierre, J. Reilly and A. Laporte.—p. 165.
Septicemia with Bacillus Fragilis. Mme. Ternois.—p. 201.
Septicemias with Streptobacillus Moniliformis. M. Morin.—p. 219.
*Clinical Study of Forty-Eight Cases of Septicemia with Hemolytic Streptococcus. J.-A. Lièvre.—p. 245.
Several Observations on Colibacillemia. R. Koch.—p. 271.
Study of Septicemia with Diphtheria Bacilli with Endocarditis Appearing in Course of Diphtherial Angina. P. Lenti and Mlle. S. Wirz. p. 293.

Septicemia with Hemolytic Streptococcus.—Lièvre bases this report on forty-eight cases which were observed at the clinic for infectious diseases at the faculty of medicine in Paris during the years 1933, 1934 and 1935. He says that in the majority of cases the streptococcic septicemia is not a primary disease; it usually is a secondary manifestation in a pathologic process which indicates clearly the way by which the pathogenic agent was introduced into the organism. In only two of the forty-eight cases was the cause not clear. In localized streptococcic infections, such as erysipelas, the streptococcus is likely to pass into the blood. Eruptive fevers likewise may become complicated by streptococcic septicemia. The author observed cases after measles which, however, were complicated with streptococcic otitis or sinusitis. The infections of the middle ear have an important part and tonsillar processes may assume a role. Discussing the symptomatology of septicemia with hemolytic streptococci, the author takes up the mode of onset, the fever curve, the general condition, the cutaneous symptoms and the involvement of the internal organs. In his discussion of the treatment he first cites mortality statistics, showing that mortality rates have been known to reach 90 per cent. In his own material, twenty-four of forty-four patients died, a mortality of 54.5 per cent. Following remarks about general measures, particularly the diet, the author says that the removal of the focus of infection is an important factor in the treatment. He says that the results obtained with serotherapy vary greatly in different reports. The experiences at his clinic have not been encouraging, for of fourteen patients subjected to serotherapy only three recovered. About blood transfusions he says that generally the effect was not clear; it was not harmful and it even seemed to improve to a certain extent the general condition and the anemia. In four cases the blood transfusion had a definite effect on the evolution of the septicemia. This effect became manifest in a rapid decrease in the temperature. The clinical histories of these cases indicate that sometimes blood transfusion may effect a sudden improvement in streptococcic septicemia.

Gynécologie et Obstétrique, Paris

38: 161-240 (Sept.) 1938

Puerperal Abscess of Uterus. R. Démares.—p. 161.
*Treatment of Toxemia or Toxicosis of Pregnancy with Progesterone. H. van der Hoeven.—p. 172.
Sterilization of Females of White Mice by Instillation of Estrogen into Vagina. A. I. Kroupsky and A. A. Blumbain.—p. 182.
Surgical Treatment of Uterine Retrodeviation. D. Dumbadze.—p. 186.
Intramural Pregnancy. S. I. Stern.—p. 193.

Progesterone in Toxicosis of Pregnancy.—After calling attention to the increased urea content of the blood in women with pregnancy toxicosis and to the effect of thyroid on this condition, van der Hoeven says that he tried estrogen without satisfactory results. Later he tried progesterone, the hormone of the corpus luteum, and obtained better results. In this connection he points out that an article by Paterson indicates that Paterson also tried progesterone in preeclamptic conditions and found that it improved the general condition and that the symptoms of intoxication diminished without a special diet. It was noted particularly that the albuminuria and the arterial tension decreased and that the edemas disappeared. After stating that Paterson made his studies with progesterone in twelve cases, van der Hoeven discusses two cases of pregnancy toxicosis in which he administered progesterone. Repeated tests on the blood pressure revealed that the progesterone effected only a temporary reduction, for, after a short time, the pressure increased again. The author further cites factors which indicate that progesterone is antagonistic to solution of posterior pituitary and that after treatment with progesterone the uterine muscle becomes less sensitive to the effect of solution of posterior pituitary. Thus, in order to reestablish the sensitivity of the uterus to solution of posterior pituitary and facilitate normal delivery it is necessary to administer also estrogen. The author reports a case in which he resorted to the administration of progesterone and of estrogen. He reaches the conclusion that by treatment with progesterone and with estrogen it is possible to ameliorate provisionally all the severe symptoms of pregnancy toxicosis, after which it is necessary to provoke premature delivery in the usual manner.

Presse Médicale, Paris

46: 1465-1480 (Oct. 5) 1938

*Electro-Encephalographic Studies on Epileptic Patients. P. Pagniez, W. Liberson and A. Plichet.—p. 1465.
*Action of Toad Venom on Heart. R. Lutembacher.—p. 1469.
Ureteropyelography in Nurslings. R. Bouchard.—p. 1472.
Angiocardiography in Children. A. Castellanos, R. Pereiras and A. Garcia.—p. 1474.

Electro-Encephalographic Studies in Epilepsy.—Pagniez and his associates point out that the electrical activity of the normal and the diseased brain has been the object of many investigators during the last few years and that epilepsy has attracted the attention of electrophysiologists more than any other nervous disease. Their studies were made on thirty-three patients with diverse forms of epilepsy, in a small number of whom the diagnosis of epilepsy was doubtful. The electroencephalograms were made with occipital, frontorolandic, biparietal, bitemporal and temporofrontal derivations (recording not simultaneous). In the course of these studies the authors observed paroxysmal as well as permanent modifications in the electro-encephalogram. They discuss and illustrate some of these modifications. They found that the epileptic patients with violent or frequent attacks and those refractory to treatment or with mental changes showed between the attacks electrical waves of abnormal frequency. In the majority of these cases the dominating frequency was between six and seven per second. Nevertheless, of twelve patients with the severe forms of epilepsy there were two who escaped to a certain extent this considerable retardation of the alpha waves, the predominating frequency being from eight to nine per second. Moreover, all the patients with severe epilepsy (except the patient who had been operated on) showed electro-encephalograms of great or average amplitudes (usually above 50 microvolts). The epileptic patients with less violent and less frequent attacks and those who were benefited by treatment did not show abnormal waves outside the epileptic attacks. Some of these patients, moreover, presented electro-encephalograms of small amplitude. Thus the electro-encephalograms of epileptic patients seem to be the objective indication of the severity of their disorder. This method of examination has not only diagnostic but also prognostic value. Moreover, it can be used for medicolegal purposes in the selection of persons for professions and for military service and in control of therapeutic measures.

Action of Toad Venom on Heart.—Lutembacher says that toads were widely used for the treatment of dropsy in patients with heart disease before digitalis was employed. After pointing out that the venom is excreted by the cutaneous glands and especially by the parotid glands of toads, the author reviews the earlier literature on the nature and action of toad venom. He first obtained and prepared the venom and then tested its action. He describes its effect on the heart action of various types of frogs and of rabbits and then describes clinical studies. The clinical observations confirmed the results of the experimental studies, that is they demonstrated that the action of toad venom is inferior to that of digitalis preparations in that it is of short duration. Finally the author demonstrates the immunity of the toad against its own venom. This immunity is related to the resistance of the toad to intoxication with digitalis.

46: 1481-1504 (Oct. 8) 1938

Kidneys and Arterial Hypertension. L. Langeron and R. Debouck.—p. 1481.
*Gold Treatment of Bronchial Asthma (Autodesensitization Under Influence of Thiosulfates). I. Vignati, V. Stalak and S. Ranchenberg.—p. 1482.

Gold Treatment of Bronchial Asthma.—Vignati and his associates describe clinical observations and animal experiments on the mode of action of the thiosulfates, particularly gold sodium thiosulfate, in anaphylactic conditions. Summarizing

their observations, they say that the antishock effects of the thiosulfates in bronchial asthma are due to the antianaphylactic effect of sulfur. The diverse cations intervene secondarily but they may appear preponderant by reinforcing or reducing the antishock effect of the thiosulfates and by modifying the metabolism of these substances. In the use of gold sodium thiosulfate it is necessary also to take into account the affinity of gold for the pulmonary tissue. In order to obtain a therapeutic effect, the presence of the allergen is necessary; the latter even plays the principal part by intervening at the moment when the thiosulfate effects a temporary desensitization. Its effect is thus produced according to Besredka's method; that is, by introducing intermittent doses into the organism. If the patient lives in surroundings rich in allergen, the desensitization renews itself incessantly and is so prolonged that it presents itself as a lasting disappearance of the sensitivity. It is this circumstance which is responsible for the lasting therapeutic effects. This justifies the assumption that the action mechanism is an autodesensitization under the influence of the thiosulfates.

Fisiologia e Medicina, Rome

8: 255-296 (July 20) 1938

*Ascorbic Acid in Healing of Fractures. G. Giangrasso.—p. 255.

Ascorbic Acid in Fractures.—Giangrasso observed the healing of fractures in fifteen cases during the administration of subcutaneous injections of ascorbic acid after reduction of the fractures followed by immobilization or traction. The first injection of 0.005 Gm. of ascorbic acid was administered the same day the fracture was reduced. The following injections of 0.001 Gm. each were given at intervals of three days up to complete healing of the fracture, which was determined by the development of the fracture as shown by roentgenograms taken immediately before and after the local treatment and at weekly intervals in the course of the ascorbic acid treatment. Children received only half the dose given adults. The patients of another group who did not receive ascorbic acid but had the fractures treated in the same manner as the aforementioned patients served as controls. The author found that formation of a strong bone callus, restoration of the functions of the fractured structures and regaining of the working capacity took place in half the time in patients who received ascorbic acid as in those who did not. He believes, therefore, that ascorbic acid accelerates formation of bone callus in fractures and that the treatment is simple, economical and important socially and from the standpoint of insurance.

Rivista di Chirurgia, Naples

41: 373-424 (Aug.) 1938. Partial Index

So-Called "Solitary Echinococcic Cysts" of Peritoneum: Case. P. Balocchi.—p. 373.
*Malformation of Pelvis and Predisposition to Inguinal Hernia. E. Rebustello.—p. 390.
Vaccine Therapy in Association with Chemiotherapy with Azo Dyes in Acute Purulent Otitis Media. F. D'Onofrio.—p. 405.

Malformation of Pelvis and Inguinal Hernia.—Rebustello measured the length of the inguinal ligaments and the depth and width of the pelvis of eighty-seven men ranging in age from 20 to 68 who were suffering from inguinal hernia of various types. Hernia was bilateral in twenty-six of the cases. Simultaneous observations were made on a group of normal men of the same age as controls. Measures of the pelvis and of the inguinal ligaments were made after reduction of the hernia. The author found that the average length of the inguinal ligament in inguinal hernia is greater than normal (about 14 cm. or more, and 10.5 cm., respectively). Frequently the inguinal ligament is longer in the herniated than in the normal side in unilateral hernia and also longer on the side of the greater than on the side of the smaller hernia in cases of bilateral hernia. The upper transverse diameter of the pelvis is longer than normal (24.2 and 23.2 cm., respectively). The lower transverse diameter of the pelvis is normal or nearly so (30.2 cm.). The pelvis is of funnel-like shape. It is deeper than the normal structure (within 11.6 and 14.5 cm. in herniation, whereas in normal men it is 9.4 cm. deep). According to the author, the malformation of the pelvis predisposes to the development of hernia.

Rivista di Clinica Pediatrica, Florence

36: 769-864 (Sept.) 1938

Volume of Blood in Normal Children. U. Gallerani.—p. 768.
*Blood Urea Clearance (Van Slyke) Test and Ambard's Constant in Children in Normal or Pathologic Condition. L. Biddau.—p. 805.
Comparative Researches on Chemistry of Blood and Cerebrospinal Fluid in Poliomyelitis. S. Moschini and L. Biddau.—p. 834.

Urea Clearance and Ambard's Constant in Children.—Biddau observed the behavior of the Ambard constant and of the blood urea clearance (Van Slyke) in 110 children. The group included sixty-eight normal children and forty-two with renal diseases and diseases other than renal. The author found that the figures of Ambard's constant are the same for normal children as for normal adults (0.042 and 0.107 with an average of 0.07), the standard urea clearance (elimination of urine showing urinary secretion below the augmentation limit which is 1.7 cc. a minute) predominates over the maximal urea clearance (elimination of urine showing urinary secretion equal to or above 1.7 cc. a minute) and the figures of the urea clearance test are lower than in normal adults when the test is made during a period of functional rest of the kidney and almost the same when the test is made during functional activity. This is due to a special functional elasticity of the normal kidney, which is opposite to the functional rigidity of the kidney in pathologic conditions. The urea clearance and the Ambard constant agree in normal children. Low figures of the Ambard constant correspond to high figures of the blood urea clearance test. Both tests show normal renal functions in heart diseases. In lipoid nephrosis the results of the blood urea clearance show normal functions of the kidney whereas those of the Ambard constant show dysfunction (false results from influence of oliguria). In acute glomerulonephritis the figures of the clearance test are low and those of the Ambard constant are high in comparison to those of both tests in normal children. The author believes that the blood urea clearance test has the same applicability, diagnostic and prognostic value in children as it has in adults. The test is not changed by influence of extrarenal factors. It is more reliable than the simple determinations of urea in the blood and the results of Ambard's constant.

Révista Argentina de Cardiología, Buenos Aires

8: 75-154 (May-June) 1938. Partial Index

*Ventricular Complex in Electrocardiograms with Deviation of Electrical Axis to the Left. B. Moia.—p. 75.
Systolic Expansion at Level of Heart Ventricles. A. C. Morelli.—p. 97.
Short PR Electrocardiographic Interval and Notched and Wide QRS Complex Showing Ventricular Asynchronism. B. Moia and L. H. Iachnapo.—p. 114.
Changes of Electrocardiogram in Parathyreoprival Tetany. R. Dassen and R. G. Dumbrosi.—p 124.

Ventricular Complex in Electrocardiograms.—Moia studied 338 electrocardiograms with deviation of the electrical axis to the left (deep S wave in the third lead and R wave higher in the first lead than in the second lead) in a group of 316 patients. The QRS complex did not measure more than 0.1 second in any of the cases. During the last week the patients were not given digitalis before the electrocardiograms were taken. There were no pregnant women in the group. The electrocardiograms were classified in four different groups according to the behavior of the QRS complex in the third lead. The predominant features in the first group (224 electrocardiograms) were the existence of a short R_3 wave and a deep S_3 wave. The S wave was deep in the second lead in 122 electrocardiograms in the group. The second group (sixty-four electrocardiograms) showed a more or less deep S_3 preceded and followed by small positive R_3 and T_3 peaks (the triphasic complex). The third group (twenty-eight electrocardiograms) showed a deep Q_3 wave with or without changes of the R_3 wave. The fourth group (twenty-two electrocardiograms) showed the M or W ventricular complex. The electrocardiograms showed a normal heart in fifty-four cases in the whole group. The T_3 wave was negative in the electrocardiograms of normal hearts in all cases but three. It was positive in all cases of alterations of the heart. In the latter cases it was associated, as a rule, with a T_1 low or flat and with a deep S_3. An inverted T wave was frequently seen in electrocardiograms of hearts either normal or slightly damaged. A downward deviation of the S-T

segment in the first and second leads with upward deviation of the segment in the third lead or an inversion of the T wave in the first and second leads showed alterations of the heart, especially enlargement and disturbances of the conductive system. The changes are not related to the type of the QRS complex in the third lead and do not appear in electrocardiograms of patients with slight myocardial alterations. A deviation of the S-T segment toward the largest ventricular deflection of the electrocardiogram or a negative T-S segment in the three leads shows myocardial alterations from disturbance of the coronary circulation. The associated presence of a deep S_2 with a low R_2 or of a small R_2 with or without notchings and a more or less deep S_3 show, in all cases, serious damage of the heart. The latter electrocardiographic changes, however, cannot be considered pathognomonic of either myocardial infarct or coronary lesion.

Revista de la Asoc. Méd. Argentina, Buenos Aires

52: 827-894 (Aug. 30) 1938. Partial Index

Ménière's Disease. F. H. Quix.—p. 827.
Metastasic Epitheliomatous Nodules in Evolution of Cancer of Lung. N. Romano, R. A. Eyherabide and A. Danelli.—p. 831.
*Ophthalmoscopic Sign for Intracranial Hypertension. J. Pereyra Käfer. —p. 835.

Early Diagnosis of Intracranial Hypertension.—The sign described by Pereyra Käfer is seen during ophthalmoscopic examination of the fundus of the eye. It consists in the diminution or absence of changes of the retinal venous circulation which are caused by bilateral compression of the jugular veins in the neck of normal persons. The changes consist in an increase of the caliber and darkening of the color of the retinal veins and diminution of the venous pulsation up to complete stopping, as compression advances and the energetic venous pulsation suddenly returns following sudden decompression (negative sign). The retinal circulatory changes do not take place in the presence of intracranial hypertension (positive sign). The author makes the ophthalmologic examinations with an ophthalmoscope for direct vision on the patient seated. An assistant, who stands behind the patient, performs bilateral compression of the jugular veins and subsequent sudden decompression in the course of the examination. The author obtained a negative response in 100 normal persons and a positive one in many cases of intracranial hypertension, fifteen of which are reported. He says that the diminution or lack of response in intracranial hypertension depends on the presence of hypertension of the retinal veins which develops earlier than edema of the optic disk. The sign is positive in intracranial hypertension of any origin. It appears earlier than edema of the disk and is reliable. When intracranial hypertension subsides, the sign changes from positive to negative.

Archiv für klinische Chirurgie, Berlin

190: 1-753 (Sept. 21) 1938. Partial Index

Recognition of Hereditary Nature of Malformations. O. F. von Verschuer.—p. 185.
Etiology of Congenital Hip Dislocation. Rohlederer.—p. 218.
*Newer Concepts of Acute Pancreatic Necrosis and Its Treatment. O. Nordmann.—p. 370.
*Treatment of Hemorrhage Due to Esophageal Varices by Ligation of Subdiaphragmatic Venous Anastomoses. C. Henschen.—p. 383.
*Operative Treatment of Bronchiectasis and Pulmonary Tuberculosis. F. Sauerbruch.—p. 456.

Acute Pancreatic Necrosis and Its Treatment.—The process in the so-called acute hemorrhagic pancreatitis, according to Nordmann, is one of autodigestion and not of inflammation. He therefore prefers the name acute pancreatic necrosis. He believes that functional disturbances of the nerves of the blood vessels have a more important part in the causation of the disease than purely mechanical factors. These disturbances lead to the impairment of nutrition of the pancreatic cells, to formation of abnormal albuminous products and to activation of trypsin. Circulatory disturbances and fermentative processes are responsible for the autodigestion of the gland. The activation of trypsin results in the formation of products of high toxicity. At present there are no means of removing or of inhibiting these products either surgically or medically. The first phase in the anatomic alterations in acute pancreatic necrosis is edema not of an inflammatory but of an ischemic nature, with beginning necrosis of cells. A number of intermediary stages lead to the conversion of the entire organ into one hemorrhagic, necrotic mass. Occasionally the process may be limited to a part of the organ. The author found diastase values increased in acute pancreatic necrosis. He feels, however, that the test is not of decisive value since it may be present in gallstone disease, in renal stones and in rickets. The increase in diastase is found during the first twenty-four or thirty-six hours, after which it rapidly falls. There may be a rise in the blood sugar level because of the destruction of insulin by activated trypsin. High blood sugar always suggests a bad prognosis. The diagnosis of acute pancreatic necrosis becomes suggestive in the presence of a history of gallstone disease, obesity, onset after a heavy meal, initial shock and vomiting of blood. The author points out that there is no point in draining the peritoneal exudate, since the latter is sterile, and while it contains trypsin it does not contain steapsin, which is injurious to tissues. Koerte advised the opening of the lesser cavity, drainage and tamponade in order to protect the rest of the peritoneal cavity. Next, the surgeons resorted to incision of the pancreatic capsule, and Nordmann advised, in addition, the removal of the gallbladder and inspection and drainage of the common bile duct. None of these measures, however, improved his results. The operative mortality has vacillated between 50 and 86 per cent. Nordmann had the experience of finding at operation a circumscribed area of edema in the pancreas, which prompted him to make a favorable prognosis, only to find at the postmortem a total necrosis of the organ. He concluded that operative manipulation of the pancreas aggravated the case. For that reason he and other surgeons have come to the conclusion that the fate of the patient with acute pancreatic necrosis is predetermined from the beginning and cannot be influenced by operative intervention. The author's mortality on the conservative regimen fell from 50 per cent to 24 per cent, Walzel's from 86 per cent to 28 per cent and Haberer's from 53.6 per cent to 23.1 per cent. It is apparent that only about one fourth of the patients die if left alone. In cases in which the diagnosis is not certain, the author advises a simple exploratory incision. In the presence of acute pancreatic necrosis nothing should be done and the abdomen should be closed without drainage. In the presence of acute inflammation of the gallbladder with the patient not in a grave shock, Nordmann would remove the gallbladder and inspect and drain, if necessary, the common bile duct, but the pancreas is let alone. Secondary abscesses which may develop in the course of the conservative treatment are treated by incision and drainage. The most dangerous complications are hemorrhage from a large artery and pancreatic fistula. The prophylaxis of recurrence consists in operative treatment of the gallstone disease. The danger of subsequent diabetes is remote, but one should observe in these patients the blood sugar level.

Treatment of Hemorrhage Due to Esophageal Varices.—The possibility of surgical intervention in hemorrhages due to rupture of an esophageal varix depends, according to Henschen, primarily on the establishment of a correct diagnosis. The general examination may reveal the existence of a liver or a splenic disease of a type predisposing to the formation of varices, while the history may bring out one or more hemorrhages in the past, recent difficulty in deglutition, and cramplike pains of the esophagus radiating to the back or the sides. Aspiration of the esophagus with a soft thick stomach tube, after the drinking of water, may reveal blood clots. Other means are direct esophagoscopy and roentgenography. The medical treatment consists of a diet, morphine-atropine, introduction of a stomach tube, transfusions of small amounts of blood, tamponade either direct with the aid of esophagoscopy or through a gastrostomy opening, or direct compression with a colpeurynter. The operative measures include the use of the thermocautery, electrocoagulation with the aid of the esophagoscope, or cauterization through a gastrostomy opening (Lund and Foley). Hans Eppinger advised a splenectomy for recurring hemorrhage. This operation, in Henschen's opinion, is indicated in bleeding leukopenic-thrombopenic types of the splenic disease and is contraindicated in high grade polycythemia and in the presence of portal vein thrombosis. The elimination of the splenic venous flow, however, is not sufficient to prevent

a fatal hemorrhage from other tributaries of the coronary gastric vein. The logical procedure in Henschen's opinion is to ligate all the venous channels arising in the portal area and entering into the formation of the periesophageal and intra-esophageal varicose plexuses. This is best accomplished by a low intercostal thoracotomy on the left side extended by an incision in the diaphragm into a transdiaphragmatic laparotomy. Splenectomy may be performed at the same time if indicated by the presence of a leukopenic-thrombopenic state or when ligation of the splenic branches running to the esophagus is technically too difficult. In cases in which the removal of the spleen is hazardous (adhesions in thrombophlebitic splenomegaly) the author advises a partial ligation of the blood supply of the organ in order to bring about an oligemia rather than ischemia of the organ. He ligates the splenic artery and leaves the vein alone so that it may function in removing the products of breaking down of the organ. The author warns that operative intervention in patients with esophageal varices, whether due to liver cirrhosis or to another cause, is fraught with many dangers, such as the conversion of a small effusion into a permanent and extensive ascites or a dry cirrhosis passing into the ascitic phase. These patients are particularly predisposed to infection. Wound infection or postoperative pneumonia accelerates the progression of the cirrhotic disease. A compensated liver cirrhosis may become decompensated. The alcoholic patient is exposed to the danger of postoperative delirium tremens. Other complications are hepatic coma and cholemic bleeding.

Surgery for Bronchiectasis and Pulmonary Tuberculosis.—According to Sauerbruch, bronchiectasis develops as a sequence to inflammatory disease of the pulmonary tissue or as a result of trauma. Bronchiectasis in children and in the young was believed to be the result of pneumonia complicating scarlet fever, measles or pleurisy. The congenital dilatation of the bronchial tree as a forerunner of the condition here was not recognized until recently. In operating on young patients the author frequently found the bronchiectatic disease limited to one lobe. The finding of a dilated bronchus with hypertrophied or callous walls amid normal pulmonary tissue pointed to the congenital nature of the bronchial dilatation. Careful microscopic studies confirmed the gross observation. Congenital dilatation of a bronchus per se is innocent. It becomes pathologic only when, as a result of a superimposed inflammation, the secretions cannot be coughed up from the dilated sacs. This leads to continued suppuration and the development of bronchiectatic disease. Mechanical narrowing of the thoracic cavity by rib resection or filling could be effective in bronchiectasis of inflammatory etiology. Bronchiectasis of congenital origin demands more radical therapy, namely the removal of the involved lobe. The operative treatment of pulmonary tuberculosis is based on the concept that the latter is a general constitutional disease. The paravertebral thoracoplasty with resection of the first to the tenth or the eleventh rib was developed as the result of careful anatomic studies. In his own clinic the operation had a mortality of 2.3 per cent and a cure in from 60 to 80 per cent when the disease was limited to one side. In less carefully selected cases the proportion of cures amounted to from 40 to 42 plus 30 per cent of the cases which showed improvement. In 1,000 cases in which there were broader indications for operative intervention the mortality was 6 per cent and the cures 40 per cent. The operation of filling, first conceived by Tuffier as pneumolysis and later developed by Baer as a paraffin filling, is useful in the treatment of hollow spaces in cured tuberculosis and again as an aid in unsuccessful thoracoplasties. The method was found to be particularly valuable in the treatment of productive cirrhotic process of the upper lobe with small but stiff-walled cavities. It may be applied in severe acute hemorrhage, and it made possible the operative treatment of bilateral involvement. In the treatment of cavities it is important to recognize two types, the early cavities with elastic circumference and the rigid cavity of tertiary phthisis. The author sees much advance in partial thoracoplasties limited to the seat of the disease. Among the important recent concepts he emphasizes that of Ranke, who called attention to the dependence of anatomic tissue reactions on allergy and the immune-biologic status of the body.

Archiv für Ohren-, Nasen- und Kehlkopfh., Berlin

145: 97-236 (Sept. 13) 1938. Partial Index

Question of So-Called "Dental" Empyema of Maxillary Sinus. K. Amersbach.—p. 97.
Etiology, Types and Terminology of Tonsillogenic Sepsis. A. Linck.—p. 103.
Dangers of Local Anesthesia in Tonsillectomy: Their Causes and Prevention. A. Linck.—p. 131.
Simplified and Harmless Anesthesia in Tonsillectomy. J. Schubel.—p. 138.
Spontaneous Hemorrhages of Palatine Tonsils. A. Linck.—p. 143.
*Acute Otitis Media and Nephritis. W. Giese.—p. 159.

Acute Otitis Media and Nephritis.—Giese studied twenty-seven cases of nephritis in patients with acute otitis media, which were observed at the otolaryngologic clinic of the University of Jena during the years from 1932 to 1937. These twenty-seven cases of simultaneous nephritis and acute otitis media represent 2.45 per cent of the 1,103 cases of acute otitis media which were treated during that period. Among the 403 cases of chronic otitis media, nephritis was never observed. The twenty-seven cases of concurrent nephritis and acute otitis media are classified into four groups, which differ greatly as regards type and course of the disease. In the first group of seven cases an acute nephritis developed in addition to an acute otitis media. The nephritis developed either several days or several weeks after the onset of the otitis media, usually following after a new attack of general infection, which was recognizable on the increase in temperature. Generally the nephritis is independent of otitis media, but it may originate in the ear as the result of a surgical trauma by way of the blood stream. In the second group of two cases an acute nephritis became complicated by an acute otitis media. These cases were characterized by a severe disturbance in the general condition. The otitis media developed independently of the nephritis but, as a result of the inadequacy of the defense powers of the organism, the otitis media developed sooner than would be the case otherwise. In the third group, which comprised sixteen cases, acute otitis media and acute nephritis developed simultaneously, frequently accompanied by diseases of other organs, particularly the rhinopharyngeal organs. The general condition is extremely poor. It cannot be determined from the outset and the course of the disease whether the nephritis is dependent on the otitis media. In the fourth group of two cases an acute otitis media developed in addition to a chronic nephritis. Observations revealed that the aural and renal diseases concurred and did not influence each other noticeably. Thus a real dependence of the nephritis on the otitis media cannot be detected in all cases and the author rejects the notion that acute otitis media is a focal infection. The concurrence of acute otitis media and nephritis as well as of other local diseases is the result of a general infection which is frequently of tonsillogenic or pharyngogenic origin. The concurrence of oral and renal disease makes no essential difference in the therapy. Surgical treatment is not necessarily more urgent or more frequent. Treatment of the ear exerts little influence on the severity or the course of the nephritis. The ear and the kidney should be treated in the usual manner and a thorough general therapy should be combined with the treatment of these organs.

Zeitschrift für klinische Medizin, Berlin

134: 671-818 (Sept. 15) 1938. Partial Index

Esophageal Electrocardiogram. O. Spühler.—p. 671.
Morbus Cushing in Patient with Ovarian Teratoma. E. Krönke and G. W. Paraide.—p. 692.
Einthoven's Triangular Diagram as Foundation of New Electrocardiographic Methods of Registration. H. E. Hollmann and W. Hollmann.—p. 732.
*Sugar Content of Cerebrospinal Fluid and Its Relation to Blood Sugar in Healthy Persons and in Patients. A. von Bothmer.—p. 754.
Influenza and Weather. J. Bauer.—p. 778.

Sugar in Cerebrospinal Fluid and Blood Sugar.—Von Bothmer mentions the diurnal alimentary and emotional fluctuations of the blood sugar and calls attention to the fact that the fluctuations in the sugar content of the cerebrospinal fluid occur later and are weaker than those of the blood. Then he discusses the factors which influence the exchange between blood and the cerebrospinal fluid. In the second part of his

paper he takes up the relation between the sugar content of the cerebrospinal fluid and that of the blood under normal conditions and in the third part he discusses this relationship in the course of diseases. The normal range of the sugar content of the cerebrospinal fluid and the normal ratio between the sugar content of the cerebrospinal fluid and that of the blood was determined on 105 healthy persons. To determine the conditions in pathologic processes, 378 examinations were made simultaneously on the cerebrospinal fluid and the blood of patients with various diseases. In his studies on normal persons the author found that, as the sugar content of the blood increases, the sugar content of the cerebrospinal fluid also shows a tendency to increase; that is, it is impossible to talk of a normal range of the sugar content of the cerebrospinal fluid which is independent of the blood sugar. However, the ratio between the sugar content of the cerebrospinal fluid and that of the blood is not constant. It is higher in the cases with low blood sugar values than in the cases with high blood sugar values. The author's observations on the ratio between the sugar contents of cerebrospinal fluid and blood differ from those of some other investigators. His opinion of the sliding adjustment of the normal ranges suggests that the active secretory function of the ependyma of the plexus has a tendency to aim at a "normal" height for the sugar content of the cerebrospinal fluid. This secretory function is strong when the blood sugar is low, weak when the blood sugar is high. However, the secretory activity is counteracted by physicochemical forces, which apparently are responsible for the fact that even in case of increased blood sugar content the ratio between the sugar contents of the cerebrospinal fluid and of the blood does not fall below a certain absolute value. The author's studies in pathologic conditions revealed that the determination of the ratio is of greater diagnostic significance than is the determination of the absolute sugar content of the cerebrospinal fluid. Reductions in the ratio occur in tuberculous meningitis, purulent meningitis, influenzal meningitis and syphilitic meningitis. Increases in the ratio are not specific for certain diseases and consequently are of slight value for the differential diagnosis; their diagnostic value lies in the fact that they usually indicate a diffuse and severe cerebral lesion.

Hospitalstidende, Copenhagen

81: 889-916 (Sept. 13) 1938

*So-Called Traumatic Thrombosis in Axillary-Subclavian Vein. E. Roelsen.—p. 889.

Biologic Establishment of Vitamin C in Woman's Milk. P. W. Brostrup and H. Lieck.—p. 913.

Traumatic Thrombosis in Axillary-Subclavian Vein.—Roelsen says that in this disorder there is an acute venous stasis, in part recurrent, manifested by marked venous dilatation and diffuse swelling of the upper extremity. The pathogenesis is uncertain. The syndrome is usually due to preceding overexertion or movement of the arm causing strain, also presumably to certain predisposing anatomic variations in the conditions about the course of the axillary-subclavian vein over the first rib. The mechanism is believed to vary somewhat in different cases. Thrombus formation must be considered a complication, most often due to certain predisposing changes in the wall of the vein or to more or less latent infections; it is not the main cause. The syndrome as a rule occurs in younger, healthy persons without preceding disturbance, particularly in men, and especially on the right side. The general condition is usually not affected. On complication with thrombosis there is often a slight rise in temperature. Complete restitution is the rule, but the time required varies from weeks to months and years, depending partly on the treatment. As long as the venous stasis or the tendency to recurrence persists, the condition invalidates manual laborers up to one third of the normal ability. The author advises first the trial of conservative treatment. Venolysis and denudation of the wall of the vein can be attempted in resistant cases. As a last resort venesection can be tried. The theoretical basis for the operation is not yet clear. Seven personal cases are reported, of which three were treated operatively.

Ugeskrift for Læger, Copenhagen

100: 1015-1044 (Sept. 8) 1938

Casuistics from Surgery of Jaw. J. Foged.—p. 1015.

*Treatment of Patients with Acute Suppurative Otitis Media, with Special Regard to Value of Syringing with Alcohol. V. Schmidt.—p. 1018.

*Treatment of Patients with Acute Suppurative Otitis Media by Syringing with Alcohol. A. Jørgensen.—p. 1022.

Roentgen Treatment of Chronic Medical Disorders of Joints. S. Heinild. —p. 1027.

Spiritism as Causative Factor in Psychic Disturbances. H. Reistrup. —p. 1031.

Alcohol for Otitis Media.—Schmidt says that in acute inflammation of the middle ear treated by his method the functional results, without after-treatment with the air douche, have been particularly good, the number of operations small, the mortality low and the average hospitalization not longer than with other conservative treatment. Early paracentesis is called for, after which hot compresses are applied for twenty-four hours. Syringing with 33 per cent by volume or 27 per cent by weight of alcohol at 37 C. is then begun. A record syringe of from 10 to 20 cc. is used, with a rubber disk attached to the cone and held to the external ear. The fluid reaches the tympanum under a certain pressure by which the discharge on the tympanum is more readily removed with the fluid as it flows back to the disk. Individualization is necessary as to the frequency and number of treatments. In rare cases irrigation three or four times a day suffices, six times daily is the rule, and more frequent daily flushings are given in cases of high temperature and a tendency of the paracentesis opening to close. Paracentesis was repeated in less than every tenth patient. The patients often notice alcohol in the rhinopharynx, which shows that the eustachian tube has become passable, favorably increasing the drainage of the middle ear, with simultaneous rapid improvement in hearing. Syringing with 27 per cent alcohol causes pain only when the treatment is delayed, so that the canal is raw. If there is pain from the mucous membrane of the middle ear, a 2 per cent solution of mupercaine is added for the first days. The author asserts that as far as he knows the combination of disinfection and astringent action with improved drainage of the middle ear through syringing with alcohol is not attained by any other agent. Of the 103 patients treated in 1936 twelve, or 11.7 per cent, were operated on; of these eight had mastoiditis on admission. After-examination in 1937 of 218 patients, most of whom had been observed for more than a year, showed that neither mastoiditis nor other complications had followed. In 210 cases the tympanum had healed, in twenty-five with small cicatrices, mostly linear; in five cases there were small, sharp-edged perforations, with normal hearing, in one a larger central perforation, in two a moist inner ear. Hearing was normal in 208 cases. In the complete material of 295 cases from the period of treatment with syringing with alcohol the mortality was about 1 per cent; two of the three patients who died were operated on immediately after admission.

Treatment of Otitis Media with Alcohol.—In the course of a year all of Jørgensen's patients with otitis media were, if immediate operation was not indicated, treated by syringing with alcohol according to the Schmidt method, either twenty-four hours after paracentesis in recent otitis or from the day of admission in cases of spontaneous perforation or paracentesis done before admission. There were 357 patients, with 509 cases of acute suppurative otitis media. In three cases treatment had to be terminated because of unbearable pain in connection with the syringing, in most cases there was pain from two to five minutes after irrigation, especially during the first days, and a few patients felt no pain. In 247 cases recovery resulted; in about two thirds of these the treatment was begun twenty-four hours after the incision of the eardrum, in one third at a later stage. Seventy-five patients, or 29.3 per cent, were operated on in spite of the treatment. The 410 patients with 584 cases of acute suppurative otitis media from the preceding year constitute the control material. Of these 37.8 per cent were operated on. The author sees as drawbacks the need of hospitalization, the painfulness of the treatment and the long duration of the treatment; the advantages are the reduced number of patients operated on, the infrequency of a second paracentesis, the absence of eczema in the middle ear and external ear, and the possibility for direct effect on the middle ear and the eustachian tube.

THE STUDENT SECTION

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Devoted to the Educational Interests and Welfare of Medical Students, Interns and Residents in Hospitals

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Medicine and Civil Government

HAVEN EMERSON, M.D.

NEW YORK

No longer ago than 1910 the students of the University of Edinburgh were congratulated by Sir William Osler on the unexcelled thoroughness with which the prevention of the acute infective fevers had been carried out in Scotland and the fact that the death rate of their city was among the lowest in Europe (15.3 per thousand). And yet if our New York Metropolitan Area should now suffer from such high rates as then and there prevailed, great would be the medical and social consternation, hysterical the publicity, and high the probability of a change of city government.

If a drop in the death rate from 15 to 10 per thousand of the population could express so considerable an alteration of professional and public attitude and such a different perspective in social conscience and ambition, what may have been some of the enduring and effective factors? Among these we like to think that society has become more sensitive to human suffering and that government has responded to social influences.

As Dr. Osler said, "The human heart by which we live has been touched as with the wand of a Prospero. What availed the sceptered race! What the glory that was Greece, or the grandeur that was Rome! Of what avail even has been the message of the gospel, while the people at large were haunted by fear and anxiety, stricken by the pestilence of the darkness, and the sickness of the noonday?"

So, the much beloved master of modern medicine saw the picture but little before you, our students of today, were born.

Now with the intervening record of war and confusion, both ethical and material, we cannot say as he did that "The outlook for the world as represented by Mary and John, and Jennie and Tom, has never been so hopeful." It is for us here and now to challenge as he did then "the dour dyspeptics in mind and morals who sit idly croaking like ravens—let them come into the arena, let them wrestle for their flesh and blood against the principalities and powers, represented by bad air and worse houses, by drink and disease, by needless pain, and by the loss annually to the state of thousands of valuable lives—let them fight for the day when a man's life shall be more precious than gold. Now alas! the cheapness of life is every day's tragedy."

THE PUBLIC HEALTH

The social change of outlook grew in strength with the spreading net of knowledge of the quantity and causes of preventable sickness and death. This took practical form in nations, states and cities within a score of years in the middle of the last century, by the action of voters and legislators who determined to include within civil government those functions devoted to protection of the general health of the population, so far as this could be achieved by the application of public authority, the employment of appropriate personnel and the expenditure of tax money. This marriage of the medical sciences to government has, it would seem, been among the highest achievements of mankind in his ever increasing social ambition to master the safety of his body and soul as well as to build a security for his goods. As one moves about in spirit or in fact among the nations the suspicion is strengthened that, of the three gospels, that of man's body is on the whole better served than are those of his spirit or his material wealth, and yet the concern of government with men's bodies has been of more recent origin than its interest in their credos or its control over their tangible property.

While various ancient civilizations have left material records of their intelligence in matters of cleanliness for the person, the home and the city, and in spite of the hygienic regulation of individual and social conduct by religions and dynasties of distant times, the permanent continuous use of the knowledge of human biology within the structure of civil government is a matter of such recent origin as to be almost contemporary with the present most productive era of the medical sciences.

Even the classic treatise of Johann Peter Frank in 1777-1778, when he completed the

Opening address before the Columbia University College of Physicians and Surgeons, Sept. 28, 1938.

publication in Mannheim of his "System einer völlstandigen medizinischen Polizy," was too far ahead of his times to have any tangible effect on the forms or functions of the government of the Palatinate or the kingdom of Bavaria.

It was the "Gesundheits Catechismus" of Bernard Christoph Faust that for some forty years after its publication in 1785 became a part of the elementary school education in Würzburg, Darmstadt, Cassell, Hanover and Hamburg. But this did not involve any substantial innovation in government or initiate new functions, merely expanding and formalizing a part of the school curriculum and clarifying the essential elements of the teaching of hygiene. It was not until 1848 when the parliament of Great Britain wrote its first public health law that there was incorporated in the form and duty of public service that element which has so amazingly influenced human life around the world.

BASIC FEDERAL STATUTES

While the germ of our own federal public health service, first so named officially in 1912, appeared in the obligation of the Treasury Department in 1789 to provide for the medical care of merchant seamen, it was not until 1893 that the Congress enacted those basic federal statutes on which the inclusive and ever broadening duties with which we are now familiar are based.

The first state department of health was established in Massachusetts in 1855 and the first metropolitan board of health with powers sufficient for all emergencies and essential functions was created by act of the legislature of New York in 1865.

It is with proper medical humility that we recall that it was the lawyer, actuary and secretary of the Poor Law Commissioners of England, Edwin Chadwick, who provided the survey of 1838, stimulated public response and developed support for the first national health law, and another lawyer and student of vital statistics, Lemuel Shattuck, who made the commonwealth of Massachusetts conscious of her health hazards and with his survey of 1854 brought the need of the public to the legislators' attention. Again it was the lawyer Dorman B. Eaton of this city who drafted the law of 1865 under which the Metropolitan Board of Health of New York operated and did it so well that it has been the model of many successors across the continent. The facts about life and death in this city, and the principles on which a modern municipal department of health was created, developed out of the famous sanitary survey conducted largely by the voluntary services of teachers and graduates of our College of Physicians and Surgeons.

It has been notable that parallel with the constantly expanding functions, best or only to be served by government for protection of the public health, there has been a rapid broadening of those of the private physician in both teaching and applying for the individual and family the precepts and procedures on which the best results of governmental activities in the last analysis inevitably depend.

It is notable that those forms of government most broadly based on the participation of men and women in the conduct of their own local and national civic affairs have been most responsive to the demand of the public for a constantly expanding use of the most recent discoveries of the biologic and medical sciences through government.

Authoritarian government seems to have lacked something essential in its application of science for human betterment. The records of the best national health are where the student, the teacher, the private and public practitioner of human biology, the doctor of medicine, are least hampered by administrative restrictions and the health officer of government is closely responsive to the informed social and professional opinion of his community.

GOVERNMENT AND MEDICINE

Many and varied have been the definitions of the objectives sought by the combined sources of government and medicine in the interest of health, from exuberant all-inclusive utopian expressions to the more modest goal of the professional worker. It was Sir George Newman, the distinguished former chief medical officer of the British Ministry of Health, who, as guest of the Academy of Medicine of this city, expressed briefly his most ambitious hopes for the function of the sciences and arts of preventive medicine, "To build a better tabernacle for the soul of man to inhabit," truly a high ideal for a profession or a state.

In its simplest terms public health consists in the application of the sciences of preventive medicine through government for social ends, and it is with this that we are concerned. At the moment sound distinctions between the functions of government and those of the independent and the responsible private practitioner of medicine are in some danger of being swept away in a wave of immature emotional, if not actually political, governmental dominance, implemented by the power of redistribution of the amount and objects of public expenditure for health and other medical services, and are threatened with extinction by the ponderance of federal opinion and tax resources.

There is perhaps still time, though barely enough, to bring to the present problems of medicine and government that slow careful study and trial which has served social evolution so well in the past.

It should be noted that while almost a century of experience with official services,

demanded and gladly accepted by the public and maintained by taxes for reducing the hazards of life by the application of preventive medicine, has made clear the distinction between what each of us can, should and must do ourselves, individually, to promote our health, and what can be done for us only by government, or at least at less cost through public service, there is neither the experience nor any substantial evidence to justify the belief that the entry of government extensively into the practice of curative medicine would achieve results comparable in the scientific, social or economic sense with those attained in public health.

Medicine, whether curative or preventive, has more to contribute than it has ever been able to deliver in the past, and by wise organization certain still greater benefits may be assured; but to reason from the productive success of preventive medicine through government for social ends that diagnosis and treatment of the individual medical and surgical patient by or under the professional and financial control of government would similarly advance social ends or the quality of medical care, or reduce its cost, is not only questionable but on its recorded performance elsewhere is at least improbable.

OUR PRESENT HEALTH STATUS

It is well to pause a moment before forming a fixed opinion or committing ourselves irrevocably to a repetition of the blunders and complexities which have arrested the progress of medicine in some other lands and consider the eminence of our own present health status. Certainly no 130,000,000 people under one government or federation of states, and no aggregation of populations representative of such different races or distributed so widely under varied conditions of climate, occupation and economic status have in the recorded history of man enjoyed such relative certainty as our people of the United States do today in the survival of their offspring in infancy and childhood, or have experienced so low an incidence of the communicable diseases or so high an average level of life expectancy. And yet in the most recent official declaration from technical committees and interdepartmental boards in Washington we read that "preventive health services for the nation as a whole are grossly insufficient."

In spite of the fact that no other such continental population has built and served hospitals so lavishly, it is true that some backward and impoverished states and particularly scattered rural populations have not yet been reached by institutional care for general illness, which is now within an hour's motor ride of more than 98 per cent of our people. These same unfavored areas lack also almost all the other conveniences and safeguards, amenities and cultural advantages of more fortunate regions of the nation. Perhaps time, patience and ingenuity in thrift are needed more than any such vast expansion of hospitals as is proposed by the federal government.

While the honest medical Diogenes searches, and generally in vain, to find persons really needing and wanting but not receiving medical attention, those who use the flood lights of unlimited publicity rather than the discriminating lantern of knowledge suddenly wring our hearts and amaze our international neighbors with the statement that "one third of the population, including persons with or without income, is receiving inadequate or no medical service." It has been estimated that about one third of our population patronizes the charlatan, the quack and the practitioners of therapeutic cults. Perhaps it is this fraction of our people that is referred to by the spokesmen of the federal government, though their words imply failure of the organized profession of medicine.

How can we add to a proper humility, as disciples of Aesculapius, acknowledgment that the abracadabra of legislation and the pompous self sufficiency of bureaucrats can and will do for one in three of our people what we as physicians have failed to do in response to the call of the sick for help?

May we not for a moment play the role of economists or sociologists and answer the fourth item of indictment with which the so-called National Health Program is launched?

"An even larger fraction [i. e., more than one third] of the population suffers from economic burdens created by illness."

Is it possible that economic confusion has been created by international fear and distrust, by class hatred encouraged by the very government that should serve all classes, by a long accumulating disproportion between the capacity of industry to produce and of the wage earner to consume, and that much illness is the sequel of economic burdens rather than chiefly their cause?

SUCCESS IN LIFE SAVING

It could probably be statistically demonstrated that preventive medicine has saved from diseases and deaths which afflicted our grandparents' generation in this country about as many persons now living as constitute the great army of the unemployed and unemployables. Our very success in life saving has certainly been a factor in creating a surplus in the labor market.

The phenomena we are facing in the relations of medicine to government, to society, to economics, to federal taxation and federal subsidies for purely local needs are too unfamiliar to the public, to the medical profession and to the Congress to permit us to accept as if final or con-

clusive the evidence offered by a technical quintet, none disciplined by or experienced in the responsibilities of independent medical practice, or by a sextet of appointed executives whose attitude cannot fail to be responsive to the expediencies of their own and their chief's political careers.

It has been said that "untroubled certainty and assured consistency" may be vouchsafed only to those who are not wholeheartedly committed to the scientific attitude of mind in the solution of their problems.

It is well known that government is a large participant in the dual system of institutional care of the sick, almost to the exclusion of private care in the management of hospitals for tuberculosis, mental diseases and those of acute communicable character, and for general illness among persons unable, at least when sick, to pay for medical attendance and hospital care. The safety and chief merit of any hospital service is the tradition and effective practice of medical staff control of policies and standards of professional care of the patients. The medical board and the clinical pathologic conference are instruments of superior value in preventing laxity in medical and surgical performance, whatever may be the limitations imposed by administration.

The same delicately adjusted balance of reciprocal functions of the government and the individual physician as exists in the main in the field of public health will have to be recognized, accepted and stabilized by law and practice in the general care of the sick before we shall have a sense of freedom from threat of government destruction of the individual practitioner of medicine, on whose broadly conceived functions the best in modern life depends.

OFFICIAL HEALTH AGENCIES

Whether in the simplest form of township, county or little city organization for health, or in great states, nations or in the Society of Nations, there are but half a dozen functions of government carried on by the work of official health agencies, which have everywhere been found necessary, to supplement the efforts and resources of the individual practitioner in relation to the families he serves. Within the definition of organized care of the sick there are as many as eight fields of service now occupied by governmental and voluntary agencies, and in each of these the control over quality of care of the sick properly rests with the professional staff responsible for the diagnosis and treatment.

Specious arguments are commonly offered, based on the fact that we have common services of police, fire, public conservancy of streets, water and sewage, and that we accept public schools for the compulsory education of our children, to persuade us that similarly tax-supported and officially administered services for sickness should be conducted by government, wholly or in part at the taxpayers' expense.

While the assistance of government may be useful, although not essential, in facilitating thrifty practices of the family in providing by periodic prepayment for the calculable incidence and necessary costs of disease, there is no reason in the experience of other countries now or in the past to justify us in creating a compulsory contributory system of support for medical care in which the physician and the patient no longer enjoy free choice of economic and professional relationship.

We can afford to take the problem piecemeal, test new devices of governmental participation, measure results in terms well tried in experience, and avail ourselves of the forty-eight experimental fields of civil government which our states offer, before plunging headlong into some national program, ill adapted to the infinite variety of our needs and resources, under the pressure of political expediency and visionary hopes.

Representative government and medicine have been partners in well doing too long to have their initial concern interrupted by temporary differences of opinion or judgment. A doughty individualist, a colleague in physiology from a sister university, has recently taken the opportunity of a tribute to the late S. Weir Mitchell to make the query "Is it not true that, when men have bartered their personal freedom for collective security, they have lost freedom without gaining a security worth having? Is it not a fact that cave fishes have some security—but no vision, while the eagle has scant security but enjoys both vision and wings?"

RELATIONSHIP OF TEACHER AND PUPIL

And so we start another season of that academic association so dear to scholars, and your teachers indulge in the perennial renewal of their confidence in human nature through their privilege of converse with you, their fellow students, separated only by the accident of age. Let me, on behalf of your teachers, express my acknowledgment of our debt to you and your successors, by contact with whom alone we continue to play our part in this collegium, of which I am reasonably sure you will grow to be inordinately fond.

Bear in mind the experience of our own particular medical philosopher, Sir Thomas Browne, who in introducing himself to his reading public said:

> Now for my life, it is a miracle of thirty years, which to relate were not a History but a piece of Poetry, and would sound to common ears like a Fable. For the World I count it not an Inn but an Hospital,

and a place not to live in but to dye in! The world that I regard is myself, it is the microcosm of my own frame that I cast mine eye on.

Surely Sir Thomas Browne would have rejoiced to hear the words of a modern manufacturer of motor cars who warned the students of a Michigan college of the hazards of today: "Your battle is against the most insidious and tireless of foes . . . the wishful thought, the tempting short cut, the shallow assumption, the clever expedient, the evasion of responsibility, . . . and the specious solution, . . . the surrender of independence and integrity of mind."

Permit me in closing to relate a personal episode from which my earliest interests in medicine and government developed:

In September 1895, when I began the daily walk from my home at Twenty-Eighth Street and Madison Avenue to our college on West Fifty-Ninth Street, I spent many an evening and all free week-ends until Election Day soliciting votes for the anti-Tammany ticket, as election district captain in the old and notorious "Tenderloin" district, under the direction of the district leader, now the president of our university. This was my initiation to the concern of our profession with public affairs.

You, the students of today, walk the brief space from Bard Hall or the subways and take for granted the general honesty and increasing competence of our city government. You see at last included in our educational community a municipal health center, the material symbol of a participation of government in applied medicine.

I beg of you, the elder workers in this sanctuary, to be patient with the clatter and dirt, the noise and shadows of the new home of the youngest specialty of the medical sciences, the Institute of Public Health, and its collaborator in the training for the governmental services of medicine, the city of New York.

Comments and Reviews

STUDENT JOHN SHAW BILLINGS

The experiences of medical students sometimes contribute to the development of powerful ideas. A notable example was an experience of student John Shaw Billings, the centennial of whose birth was celebrated this year. Billings was born in southeastern Indiana and was graduated from Ohio Medical College in Cincinnati in 1860, after earning his way by residing in the hospital and later taking care of the dissecting rooms of the college. In writing his graduating thesis on the results of surgical operations for the treatment of epilepsy, he found it was practically impossible to review the literature. In order to find the data in their original form, he consulted many books and ransacked libraries in Cincinnati, Philadelphia and New York. After six months of such harrowing work and correspondence, he learned there was then not a medical library in the United States in which a student could find a large part of the literature on any medical subject. It was necessary for investigators to visit the capitals of Europe to be reasonably sure of having seen all the reports made by previous investigators on a given subject. It was this experience, Billings said some thirty years later, that caused him to try to establish for American physicians a complete medical library and an index of medical literature which would spare investigators the impossible task of consulting thousands of texts to find a few references. Thus was born the idea from which developed the greatest medical library in the world today, the Army Medical Library in Washington, D. C.

After graduating, Billings began to practice in Cincinnati; but in a short time the Civil War came along and he entered the Medical Department of the United States Army, serving at the battles of Gettysburg and Chancellorsville, in field hospitals, and in hospitals in New York harbor. In 1864 he was detailed to the Surgeon General's Office in Washington, and here his genius found an opportunity to develop. The Surgeon General's Library at that time comprised 2,253 volumes. A fund of about $80,000, left over from the Civil War hospital funds, was entrusted to Billings in 1868 to use for the improvement of the library, and at once he embarked on the great work that eventually was to make it possible and practical to review the medical literature. He began collecting and cataloguing and in 1872 published the first Catalogue of the Surgeon General's Library, which comprised 454 pages with a supplement of twenty-six pages. Two years later he published a three volume catalogue. His vision, however, was much broader. He wanted a catalogue in which under the names both of authors and of subjects the literature of the world would be indexed. He prepared a specimen and submitted it to leading members of the profession throughout the country in 1876. When their approval was received, he began to prepare the famous Index Catalogue of the Surgeon General's Library, which, Edgar Erskine Hume[1] says, marked an epoch in the development of medical literature. Physicians who formerly

1. Hume, Edgar Erskine: The Centennial of the World's Largest Medical Library: The Army Medical Library at Washington, Founded 1836, Mil. Surgeon 78:341 (April) 1936.

obtained data and reviews in a haphazard way now have the literature of the world indexed in a convenient form. The first series of the Index Catalogue, comprising sixteen volumes, was published between 1880 and 1895; the second series, of twenty-one volumes, between 1896 and 1916, and the third series, of ten volumes, between 1918 and 1932. The first three volumes of the fourth series have more recently been published. The Index Catalogue is the most comprehensive bibliography ever attempted in any field. Its preparation, Sir William Osler said, is gargantuan. Dr. William H. Welch said that it is the greatest contribution of America to medicine.

John Shaw Billings had other talents. As Garrison shows in his memoir,[2] Billings designed the great Johns Hopkins Hospital in Baltimore. He was in charge of vital statistics during the tenth and eleventh census of the United States and was in part responsible for the development of the United States Public Health Service. He became professor of hygiene in the University of Pennsylvania; he consolidated and catalogued the three public libraries of New York City. He was the author of numerous publications, among which were [3] "A Sanitary Survey of the United States," "The Cholera Epidemic of 1873 in the United States," "Reports and Papers on the Johns Hopkins Hospital," "Reports on Barracks and Hospitals," "Reports on Diseases of Cattle in the United States," and his classic "Literature and Institutions." His greatest achievement, however, was the development of the Surgeon General's Library and the Index Catalogue. The development of student Billings into the great librarian makes it possible even today for physicians in any part of the United States to have access to much of the medical literature of the world, for on request through their local library they can borrow for a short time books and periodicals from the Army Medical Library in Washington, D. C.

HOW TO REVIEW MEDICAL LITERATURE

The librarian of the New York Academy of Medicine, Dr. Archibald Malloch,[1] recently addressed the Hartford Medical Society at a dinner in honor of Dr. Walter R. Steiner, who for thirty-five years has been librarian of the society. Dr. Malloch said that physicians should be insured against certain risks which they may encounter after graduation: the risk of being satisfied with methods of diagnosis and treatment learned in medical schools; the risk of being content with what is good instead of striving for what is better; the risk of intellectual or mental laziness which often comes to those in the midst of a busy practice; the risk of becoming rusty. The kinds of insurance against these dangers which the speaker suggested were: (1) the study of disease in private patients as well as in hospital practice and the recording of this experience in carefully taken notes; (2) discussion of problems at meetings of medical societies; (3) the publishing of brief papers about your cases; (4) the perusal of medical journals and books, so that it becomes a habit. "To study the phenomena of disease without books is to sail an uncharted sea, while to study books without patients is not to go to sea at all." These were the words of William Osler.

It is good for a physician to purchase a system of surgery and read some part of it every day; and, likewise, for a surgeon to read a system of medicine, making notes as he reads. The reading habit stimulated Bigelow to say that Oliver Wendell Holmes could get what he wanted out of a book as dexterously as a squirrel can take the kernel of a nut out of the shell.

Medical literature is indexed so well that work in the libraries is easier than if one were studying almost any other profession. The speaker did not refer to the very old bibliographies but mentioned first the *Index Medicus*, which was published in three series between 1879 and 1926, except that from 1900 to 1902 its place was taken by the *Parisian Bibliographica Medica*. In 1927 the *Index Medicus* joined with the *Quarterly Cumulative Index*, which had been published by the American Medical Association since 1916. The combined indexes were then published under the title *Quarterly Cumulative Index Medicus*, which continues to be published by the American Medical Association. You may readily see, Dr. Malloch said, that to find the articles and books which have been published on a subject, you would have to look in all the volumes of the *Index Medicus* and in all of the semiannual volumes of the *Quarterly Cumulative Index Medicus*. The great John Shaw Billings, the centennial of whose birth has been celebrated this year, was the father of the *Index Medicus*. He planned and brought out also a much more comprehensive work, the *Index Catalogue of the Surgeon General's Library*, which is still being published. The *Index Catalogue* began in 1880 and had passed through three series of volumes by 1932. The first volume of the fourth series appeared in 1936 and the second volume in 1937; the other volumes in the fourth series will appear from time to time. Each volume of the *Index Catalogue* covers all the medical literature in the Army Medical Library that is indexed under one or more letters of the alphabet, at the time of going to press. The *Index Catalogue* is an

2. Garrison, Fielding H.: John Shaw Billings: A Memoir, New York, G. P. Putnam's Sons, 1915.
3. Kisor, Edgar F.: John Shaw Billings of the Centenary of the Army Medical Library, J. Indiana M. A. 29:424 (Sept.) 1936.
1. Malloch, Archibald: A Short Talk on Medical Libraries, J. Connecticut M. Soc. 2:223 (May) 1938.

author and subject index in one alphabet, the books, reprints and theses appearing under "author," while under "subject" are found the books, theses and titles of all magazine articles. In the first series of the *Index Catalogue* was indexed all the old and new books in the Army Medical Library at the time, as well as all articles printed in old journals on down from the time of their beginnings. What a piece of work!

The second series of the *Index Catalogue* indexed the old or ancient books which had come to the library after the first series was published, and also old journal articles. The fourth series indexes under an author's name the old editions of his books that have been obtained since the corresponding volume of the third series was issued. Each volume of the *Index Catalogue* includes now about twenty years of modern literature. In attempting to find what has been written, for instance on the subject of pneumonia since the beginning of time, one has only to look at the volumes in the first, second and third series of the *Index Catalogue*, which list the publications on pneumonia, instead of looking at the many, many volumes of the *Index Medicus*. One should bear in mind, however, in connection with the third series of the *Index Catalogue* that in the volume Gelzet Bey and later volumes no journal articles published after the end of 1925 were included. Articles not included in the third series will, however, be included in the volumes of the fourth series covering Ge to the end of the alphabet. For more recent articles on subjects not dealt with in the first two volumes of the fourth series of the *Index Catalogue*, one must consult the volumes of the *Quarterly Cumulative Index Medicus*.

Thus if one is writing a paper, the way to review the literature is to look at all titles of books and articles on one's subject listed in the volumes of the different series of the *Index Catalogue* and then go through all the volumes of the *Quarterly Cumulative Index Medicus*. What a historical perspective this will give! Do not let anyone look over these lists for you, Dr. Malloch advised, or you will miss much of great value. The greatest physicians that he has known have written their own papers, including the preparatory work. As you go through the lists, he continued, select the titles of monographs or articles that you wish to read. Look also at systems of medicine or surgery, for the titles of their articles are not given systematically in the published indexes. Should your library not possess all these books or journals, ask to borrow them from the Army Medical Library. Keep notes on little points that you desire to look up in the library. Visit the library regularly to see the new books and journals as they come in, and read what you wish of them. Browsing in libraries is a source of great pleasure and profit. It was Osler's habit to go to the library of the Medical and Chirurgical Faculty of Maryland in Baltimore several times a week before dinner, and to make notes of what he read.

THE SOCIAL SIDE OF MEDICAL PROGRESS

Abridgement of an address before the annual meeting of the Minnesota State Medical Association, Duluth, June 30, 1938, by Dr. Howard W. Haggard of Yale University Medical School, New Haven, Conn., and published in Minnesota Medicine, October 1938.

It is well at times to draw back a little from the details of immediate and practical projects and in contemplation to view medical and social situations in broad perspective, to see trends, directions and dimensions.

Viewed in this way the feature that shows as peculiar to the present period is the rapid shift and change of long established social institutions. As we watch these changes, the realization is forced on us that the body of society is a delicately integrated entity so interdependent in its parts that a change in any one must necessarily result in a change in all other parts, in a total readjustment.

Thus if medical discovery is made and applied to the saving of lives, there must follow a reorganization of society as a whole. The saving of life results in a change in the age structure of the population. The change in the age structure of the population upsets the balance of the established institutions and necessitates social and economic readjustments.

It is axiomatic in our field that, as one disease diminishes, others rise to take its place. As the incidence of tuberculosis, typhoid, dysentery and smallpox go down, cancer and diseases of the circulatory system rise correspondingly. The change in the leading causes of death in the last thirty-eight years is common-place knowledge.

Sometimes I think the physician fails to see that medicine itself is one of the institutions affected by the changes that are brought about. Medicine does not stand alone; it is an integral part of society. In the face of such change there appears one of the peculiarities of medicine: the failure to realize that it must change as society changes. The medicine of today may be vastly different from the medicine of the past but the fact remains that the social and sociological forces that guide it operate on it today just as they did in the past.

The great danger that I see to the practice of medicine today lies in the very thing that has given medicine its modern preeminence, and that is science. The physician has committed himself to science. He stands or falls with it. My indictment tonight is against this science—

a science that has led the doctor to neglect the equally fundamental and nonscientific social aspects of medical practice—those things that we sometimes sum up as the art of medicine, a thing about which the younger generation of physicians knows so little. The doctor, in making a fetish of science, may find himself worshiping alone. He will unless his medical practices are changed continually to suit precisely the society in which he lives.

The doctor of America in the eighteenth and early nineteenth centuries was not a scientist. He was a public-spirited man whose medicine suited the times. He was a social leader, embodying the rare combination of medical practice and sociology. We today look with pity, mingled with contempt, on the practices of Benjamin Rush. Yet, in spite of his lack of science, Rush as practitioner and medical leader has no equal today. The tenet of the young physician today is too apt to be the reverse of that of Rush.

The reason for the mode of thought that pervades medicine today is not hard to find. In the last hundred years, with the introduction of the exact sciences into medicine, medical research has yielded some of the most beneficial knowledge that the human race has ever acquired. Enthusiasm has grown high and a mode of thought crystallized. The science of medicine has been elevated; the practice of medicine, which is not a science and never will be, has been subordinated.

The emphasis on research has resulted in the development of an aura of sanctity about research. The acquisition of knowledge has received and still receives a cultivated regard amounting almost to a veneration, and one out of all proportion to the regard given to the application of the results of research. This mode of thought, scientific research—the search for novelty, the new—is inculcated in the medical student and hence in the physician; it has given a direction to medicine. And the movement has developed an inertia so that medicine cannot readily turn to new directions, although those directions are clearly indicated.

Medical science is not medical practice. The great benefits from the application of preventive medicine that so dominate the public mind today are not those of medical practice. These matters are science and being science they do not require the participation of the practitioner. Any aspect of medicine that has been reduced to an exact science needs merely medical technicians and not physicians for its accomplishment. Such is the case with much of sanitation. Such is the case also with many of our diagnostic tests. At one time it required the consummate skill of the physician to determine in some cases the presence of syphilis; now a far more accurate diagnosis is made by a technician in the laboratory. When—and if—medicine becomes an exact science we shall no longer need the practicing physician. Until it does become an exact science, then we not only need him but we should grant him his due and proper importance.

THE ART OF THE PHYSICIAN

The practicing physician is not a scientist. He is, if he really practices medicine, more, far more, than a scientist. He is an artist. He does not deal with the controlled and limited matters of the laboratory; he deals with human beings. So long as the human mind in its full ramifications remains beyond an evaluation with scientific precision, then the practice of medicine must remain an art. So long as medical practice involves the personal contact of physician and patient, then it is the art of the physician which must establish the necessary bond. This is very different from medical research. It is, in many ways, more difficult. It involves not only intelligence and skill but also qualities of personality unnecessary to the research worker.

In the first flush of the triumphs of the application of science to medicine, it appeared that all the problems of medicine were to be answered and that medicine at last was destined to become as exact and impersonal as engineering. In consequence, to the eventual great detriment of the practice of medicine, our medical education was changed. It adopted the precise methods of science. It built its structure on the laboratory as a foundation.

MEDICAL EDUCATION

Let us trace the broad steps in the change in American medical education. A century and a quarter ago French medicine went through one of the periodic changes of direction. The old formal dogmatic teaching gave way to an active clinical investigative type of medicine. Germany, following the Napoleonic wars, was in the throes of a wave of idealism and romanticism that denied in the medical schools factual investigation and permitted only speculation. It was one of the extremes of the pendulum movement of education. Then it swung the other way; by the middle of the century German preclinical medicine had been founded by Johannes Müller. His pupils, including Virchow, give the roster of the famous teachers and investigators of Germany. Almost without exception, and this includes Müller, they were men with enormous social interests. Virchow, you will remember, was as fearless and fiery in his political activities and his denouncements as he was in the classroom. The best of German medicine was gradually brought to America. The part that caught and held attention was the research aspect. At first the leading schools in this country were

famous for their clinical teachers. The preeminence of Johns Hopkins in the closing years of the last century and the early years of this century was based on its great clinicians. Today, with the continual swing of the pendulum toward research, the preeminence of a school is judged not by how well it trains doctors for the practice of medicine but on the eminence of its researches. The chairs once occupied by great clinicians with wide social interests and wide social influences are too often filled by scientists out of touch with the real problems of the practitioner. Few great scientists have been eminent physicians. Formerly students in our schools were trained to be socially beneficial. Now they are trained too often with the apparent intention of making laboratory investigators out of them and that in spite of the fact that medical practice is a social application. Too often today we train not physicians with all the significance of the term but, instead, bedside pathologists.

Medical training is being divorced from medical practice; preclinical training is being sold out to educators who are not even physicians. The emphasis on science, on the laboratory, has extended down even into the premedical field in the college. The selection there is made on the basis not of socially minded individuals who would make good practitioners but of aptness in the laboratory subjects. The class of men who enter Eastern colleges are today, as potential material for social leadership, distinctly inferior to the young men from the same colleges entering law and business. We are turning away good men because no matter how great their ability might be as practitioners they show no aptitude for the technic of medical research.

SOCIALLY MINDED PHYSICIANS

There is a greater need for socially minded public-guiding physicians than at any previous period in medicine. The diseases that come to the front in the modern medical readjustment cannot be cured or prevented by impersonal science. They can be controlled only by the close and intelligent cooperation of the individual members of the public with the physician. Obtaining this cooperation is a vastly different matter from acquiring the knowledge of how to prevent or treat the disease. It is not medical research or science; it is the practice of medicine in its broadest service of a social leadership.

The social worker today knows that the greatest, indeed probably the only possible field of social betterment is offered by medical application. Some aggressive lay groups stand ready to raid the medical field for its unapplied potentialities. With the natural reaction of newcomers to the field, they assume there is something basically wrong with the form of medical practice. Their first inclination is to remake the form of medicine.

Public opinion determines the condition and future of medicine. Advancement, construction, is not made by great numbers but by great individuals. It isn't what medicine does, it isn't what science discovers, that gives the necessary high public regard to the physician. It is what the public thinks and believes. The physician, in casting his lot with scientific research, stands and falls with it. And he has chosen an uncertain support. A social disturbance destroys first of all medical science. A little over a hundred years ago there was no medical science in Germany. Then in half a century Germany raised herself to world preeminence in medical science. And then in the present century, under changing social conditions, medical science declined in Germany; it is disappearing; it has already gone in Russia, Italy and Spain. We still have it, but it remains at the mercy of social change.

The permanent basis of medicine is not its research, but its social application—its practice.

APPLICANTS FOR ADMISSION TO MEDICAL COLLEGES

The study of applicants for admission to the freshman class of 1937 at seventy-eight medical colleges in the United States, published in the *Journal of the Association of American Medical Colleges*, is the tenth study of this kind made by Dr. Fred C. Zapffe,[1] secretary of that association. These annual studies provide reliable data on the number of applicants for admission to medical colleges, the action taken by the colleges, and the basis of acceptance and rejection. The number of applications for admission to the medical schools has increased from 29,705 in 1933 to 35,439 in 1936. The number of applicants accepted, however, has steadily declined from 7,419 in 1934 to 6,410 in 1937. Nearly 11 per cent of accepted applicants in 1937 did not enroll.

The 1937 freshman class was the smallest in ten years. The agreement between the Council on Medical Education and Hospitals of the American Medical Association and the Association of American Medical Colleges that there should be one full-time teacher for each twenty-five students in the preclinical departments has tended to make smaller classes. When general business conditions are good, attendance in medical colleges falls off, and vice versa; the attendance reached a record high in 1932 and has since declined. From 23 to 25 per cent of students entering will not graduate. About 200 repeaters enter every freshman class, 75 per cent of whom fail to make good.

1. Abstract of a paper by Fred C. Zapffe, published in the Journal of the Association of American Medical Colleges, May 1938.

Women multiple applicants have increased at a greater rate than men; there were 60 per cent more women multiples in 1937 than in 1933. Otherwise the number of women applicants has followed the same trend as that of the men applicants. Sixty-two per cent of women applicants were accepted in 1933, 52.4 per cent in 1937 (52.5 per cent of men were accepted in the same year). The total of accepted women applicants remains under 400 each year.

The number of medical students who have had less than three years of college work is decreasing each year. Accepted applicants of this group constitute 9.2 per cent of all accepted applicants. Of all applicants, 32.6 per cent have had three years or more of college (no degree) and 54.7 per cent of this group were accepted. The degree group represented 52.1 per cent of all applicants; 55 per cent of this group were accepted. Applicants are not discriminated against on the basis of college work taken, if the scholastic record is good.

Data are submitted on the total number of applications made in 1937 to seventy-eight medical schools. Five schools (Columbia, Northwestern, Pennsylvania, St. Louis and Temple) had more than 1,000 applications each. The maximum was 1,263 (Pennsylvania). These schools and twelve others enrolled more than 100 students each. Nine schools (including six two-year schools) had less than 100 applications. Thirty of the schools enrolled less than sixty students each.

In 1937, data on 5,643 multiple applicants show how they fared as to acceptance. The group has increased 22 per cent since 1933 but acceptance of multiples has declined 11 per cent in five years. Single applicants have diminished 10 per cent in five years. Thirty-two per cent of multiples made two applications, about 40 per cent made from three to five applications, about 18 per cent from six to ten applications, about 8 per cent from ten to twenty applications and the remainder more than twenty applications. Many multiples continue to make applications for years with no acceptances; one person made seventy applications in three years.

Medical College News

Medical schools, hospitals and individuals will confer a favor by sending to these headquarters original contributions, reviews and news items to be considered for publication in the Student Section.

Stanford Students Active in November Election

The student body of Stanford University School of Medicine, San Francisco, took an active part in the November 8 election with regard to State Proposition No. 2 on the ballot, which was said to be misnamed the "Humane Pound Act." The student body said "it is a vicious threat to the health and well-being of the public, camouflaging regulations of animal pounds." It proposed to prohibit the use of animals by universities, medical schools and laboratories for scientific purposes. The proponents of this bill, the student body said, "show an utter disregard for the invaluable knowledge with which biologic research has equipped the physician to battle disease." As future physicians charged with the responsibility of the maintenance of health and the prevention and cure of disease, the student body urged the defeat of the so-called Humane Pound Act. The California voters defeated the proposal.

Larger Quarters for Interns

Two additional floors on the Administration Building of the University Hospital, Ann Arbor, Mich., are to be constructed to provide for the housing of the entire intern staff within the main hospital building. In addition to sleeping quarters there will be recreation rooms and lounges for the interns and hospital staff. The two houses which now are occupied by some of the interns will be released for other purposes.

American Student Health Association

The annual meeting of the American Student Health Association will be held December 29-30 at the Hotel New Yorker, New York City.

Fellowships in Anesthesiology

Graduate fellowships in anesthesiology have been established by the Medical School and Graduate School of the University of Minnesota, Minneapolis, for physicians who desire to prepare themselves for the practice of this specialty. The fellowships offer an abundance of clinical training in all types of local, regional and general anesthesia and gas therapy, and also adequate related graduate work in chemistry, anatomy, physiology and pharmacology. Applicants must have served at least one year in a rotating internship.

Iowa Promotions

Dr. Ewen M. MacEwen, dean, State University of Iowa College of Medicine, Iowa City, announces the following promotions on the faculty:

Harry M. Hines, Ph.D., associate professor to professor of physiology.

Wald W. Tuttle, Ph.D., associate professor to professor of physiology.

Dr. William F. Mengert, assistant professor to associate professor of obstetrics and gynecology.

Dr. John H. Randall, assistant professor to associate professor of obstetrics and gynecology.

Dr. Emery D. Warner, assistant professor to associate professor of pathology.

Dr. Thomas L. Waring to assistant professor of orthopedic surgery.

Dr. James A. Greene, assistant professor to associate professor of theory and practice of medicine.

Michigan Personals

Marshall L. Snyder, Ph.D., teaching assistant in bacteriology at the University of Michigan Medical School, Ann Arbor, has been appointed instructor in bacteriology.——Vivian G. Behrmann, M.S., assistant in physiology at the University of Michigan Medical School, has resigned to accept an appointment in the Woman's Medical College of Pennsylvania, Philadelphia.

New Teachers at University of Tennessee

The following appointments to the faculty of the University of Tennessee Medical School, Memphis, have been announced:

Dr. Kendall B. Corbin, formerly of Stanford University, Calif., to be associate professor of anatomy.

Frank Harrison, M.S., formerly of Northwestern University School of Medicine, Chicago; instructor in anatomy.

Howard C. Peters, Ph.D., formerly of the University of Minnesota Medical School, Minneapolis; instructor in physiology.

Dr. Robert A. Bussabarger, formerly of Detroit; instructor in pharmacology.

Charles C. Rainey, Ph.D., formerly of Berry College, Mount Berry, Ga.; instructor in chemistry.

Four Year Course in Preventive Medicine

A grant of $84,000 from the Commonwealth Fund has been made possible at New York University College of Medicine, New York, for a new program on preventive medicine which will comprise studies covering a four year period. In the announcement the dean, Dr. Currier McEwen, is reported to have said that the nucleus of the new department of preventive medicine was the Hermann M. Biggs professorship in preventive medicine, established years ago as a memorial to the late Dr. Biggs, who was a pioneer in public health work. The expansion of the department at this time is in recognition of the work of the late Dr. John Wyckoff. Dr. Harry Stoll Mustard will be director of the department and the program will be conducted by a full time staff of instructors and technicians. Instead of concentrating studies in preventive medicine in the last two years of regular medical college work, it will now begin in the freshman year. A teaching and research center will be provided in the facilities of the lower East Side Health District, the use of which has been made possible through the cooperation of the New York City department of health.

Maryland Personal

Dr. Charles D. Smith has resigned as chief resident of the Radiological Department of Johns Hopkins University School of Medicine, Baltimore, and has entered private practice at Richmond, Va.

Wayne University News

A total of $45,000 has been accepted by the Wayne University College of Medicine, Detroit, in support of research and teaching at the college of medicine. The largest single gift was $10,000 for the establishment of a research laboratory in ophthalmology. Dr. Parker Heath, professor of ophthalmology, has charge of the laboratory. Gordon L. Walls, Sc.D., has been appointed research associate in ophthalmology.

Texas Personals

Drs. Isaac P. Barrett and Harold M. Williams, Fort Worth, assistant city health director and city epidemiologist, respectively, have been awarded scholarships for public health studies at Vanderbilt University, Nashville, Tenn.

Three Generations of Doctors

With the graduation of Drs. James B. Witherington and Albert S. Witherington, Millington, in September from the University of Tennessee School of Medicine, Memphis, there have been three successive generations of physicians in the Witherington family. Dr. Albert S. Witherington Sr., Millington, graduated from the Memphis Hospital Medical College in 1904 and his father, Dr. James B. Witherington, Munford, from Vanderbilt University School of Medicine, Nashville, in 1878.

Six Surgeon Generals from University of Pennsylvania

The University of Pennsylvania School of Medicine, Philadelphia, is credited in the October *Pennsylvania Gazette* with having graduated six surgeon generals of the United States Army Medical Corps. They were Clement A. Finley, who graduated in 1818 and served as surgeon general from May 15, 1861, to April 14, 1862; Joseph K. Barnes, who graduated in 1838 and served as surgeon general from Aug. 22, 1864, to June 30, 1882; Robert Murray, who graduated in 1843 and served as surgeon general from Nov. 23, 1883, to Aug. 6, 1886; William H. Forwood, who graduated in 1861 and served as surgeon general from June 8, 1902, to Sept. 7, 1902; Robert M. O'Reilly, who graduated in 1866 and served as surgeon general from Sept. 7, 1902, to Jan. 14, 1909, and the present surgeon general, Charles R. Reynolds, who graduated from the University of Pennsylvania in 1899 and was appointed surgeon general in 1935, after many years of distinguished army service.

Faculty Changes at Columbia

The following medical appointments and advancements at Columbia University, New York, have been announced:

Associate Professor, Dr. Milton Carl Peterson (New York Post-Graduate Medical School).

Assistant Professors: Dr. Virginia Apgar, anesthesia; Dr. Gaston Arthur Cariucci, clinical surgery; Dr. Beatrice Maher Kesten, clinical dermatology; Dr. Rafael Rodrigues-Molina, tropical medicine (School of Tropical Medicine); Dr. Jose Rodrigues Pastor, bacteriology and hygiene (School of Tropical Medicine); Dr. Otto Klineberg, psychology; Clarence R. Carpenter, Ph.D., anatomy.

Assistant Clinical Professors: Drs. Abbott William Allen, medicine (New York Post-Graduate Medical School); Zacharias Bercovitz, medicine (New York Post-Graduate Medical School); John Dorsey Craig, pediatrics (New York Post-Graduate Medical School); John Staige Davis Jr., medicine (New York Post-Graduate Medical School); Frank Miller Falconer, medicine; Julian Maxwell Preston, medicine; Samuel Waldron Lambert Jr., medicine; Robert McGrath, medicine (New York Post-Graduate Medical School); Thomas Turlay Mackie, medicine; Theodore Neustaedter, gynecology (New York Post-Graduate Medical School); Robert Louis Preston, orthopedic surgery (New York Post-Graduate Medical School); Theodore Campbell Thompson, orthopedic surgery.

New York Personal

Dr. Ralph E. Knutti, assistant professor of pathology at the University of Rochester School of Medicine, New York, addressed the students and faculty of the West Virginia University School of Medicine, Morgantown, September 23, on "Plasma Protein Regeneration."

Appointments at Duke University

The following appointments were made recently to the faculty of the Duke University School of Medicine, Durham, N. C.: Dr. Harold W. Brown, professor of preventive medicine and public health; Dr. James P. Hendrix, associate in medicine, and Hans Neurath, associate in biochemistry.

South Carolina Personal

Dr. S. C. Werch, demonstrator in physiology at the School of Physic, Trinity College, Dublin, has been appointed instructor in the department of pharmacology in the Medical College of the State of South Carolina.

Fordham Opens New Pharmacology Laboratory

Fordham University, New York, has opened a newly equipped laboratory for applied physiology and pharmacology in the Pharmacy Building on the campus, in conjunction with the inauguration of a new course leading to the degree of Bachelor of Science in Pharmacy. The laboratory will be used

for the new courses in physiology and pharmacology for the sophomore and junior students in B.S. courses in pharmacy and for graduate students who wish to further their studies. It is fully equipped for research, and apparatus for the study of body function and drug action is available for student use. The laboratory will be under the direction of Leonard J. Piccoli, Ph.D., professor of materia medica, pharmacology and physiology. Its facilities will also be used by the seniors and graduate students of biochemistry who are taking courses in anatomy and physiology under Dr. Piccoli.

Wisconsin Personal

Malcolm R. Irwin, Ph.D., associate professor of genetics, University of Wisconsin, Madison, addressed the university medical society October 27 on "The Inheritance of Resistance to Bacterial Infection."

Changes at the University of Texas

The board of regents has approved the following appointments to the faculty of the medical branch of the University of Texas, Galveston:

Dr. John L. Otto to the department of neurology, replacing Dr. Martin L. Towler, resigned.

Dr. James R. Herred to the department of obstetrics, replacing Dr. Charles M. Mulherin, resigned.

Drs. Elva A. Wright, Fred B. Smith, Frank J. Hams and Adair W. White, staff members of Jefferson Davis Hospital, Houston, who will serve without pay in the department of obstetrics.

Dr. Wylie F. Creel to the practice of medicine department, replacing Dr. Michael B. Shimkin, resigned.

Dr. Robert A. Edwards as graduate assistant in the practice of medicine.

Dr. Charles E. Webb assistant in surgery, Dr. Clyde E. Thomas Jr. junior assistant in surgery, and C. C. Scott assistant in physiology.

Tennessee Personal

Cleveland S. Simkins, Ph.D., associate professor of anatomy, University of Tennessee College of Medicine, Memphis, has resigned to become head of the department of anatomy at Creighton University School of Medicine, Omaha, effective September 15. After receiving the degree of doctor of philosophy at Harvard University in 1931, Dr. Simkins was appointed assistant professor of histology at the University of Tennessee. He was appointed associate professor of anatomy in 1923.

Iowa Personal

Dr. Raymond G. E. Bunge, of Imlay City, Mich., has been appointed to the staff of the department of urology, University Hospital, at the University of Iowa, Iowa City. Dr. Bunge interned two years at the University Hospital at Ann Arbor, Mich., after receiving his M.D. in 1936 from the University of Michigan.

New Pathology Building at Georgia

The construction of a new laboratory and classroom building to house the departments of pathology and bacteriology at the University of Georgia School of Medicine, Augusta, was begun September 28. The new building will be adjacent to the Dugas Building, which also is new, and the cost of construction will be $70,000.

District of Columbia Personal

Dr. Walter Andrew Bloedorn, professor of medicine in the School of Medicine of the George Washington University, Washington, D. C., and medical director of the University Hospital, has been appointed acting dean of the school of medicine.

Michigan Awards the Sternberg Medal

The Sternberg Memorial Medal, which was established in honor of the late Dr. George M. Sternberg, formerly surgeon general of the United States Army, is awarded annually to the medical student who has made the best record in preventive medicine. The award is made by the faculty on the recommendation of a committee. The winner in 1938 was Dr. William Kaufman.

Kentucky Personals

Dr. Jackson M. Thomas has resigned his position as associate professor of psychiatry at the University of Louisville School of Medicine to enter the department of psychiatry at Harvard University, Boston. Dr. William K. Keller has been appointed to fill the vacancy. Dr. Keller, a native of Louisville, recently completed a year of study in London on a Rockefeller fellowship.

Scholarships and Fellowships at Harvard

Harvard University Medical School, Boston, has awarded sixty-three scholarships totaling $25,578 to medical students and has also awarded twenty-four fellowships totaling $21,650 for the coming academic year. The names of the fellowships together with the recipients and the departments in which they work are given in the following list:

Edward Austin Fund Teaching Fellowships: Oliver H. Lowry, biochemistry; Duncan E. Reid, obstetrics; Bernard B. Hodes, physiology; James M. Parker, surgery.

Edward Hickling Bradford Fellowship for research: Francis S. Chesver, bacteriology.

John White Browne Scholarship for research: Smith Owen Dexter Jr., medicine.

William Story Bullard Fellowships for research: Arnold Max Seligman, chemistry; Bernard David Davis, physical chemistry; Lawrence C. Kingsland Jr., medicine.

Arthur Tracy Cabot Fellowship for advancement of surgery: John E. Dunphy, surgery.

James Jackson Cabot Fellowship "to aid and encourage practical work in scientific medicine": John Holmes Dingle, surgery.

DeLamar Student Research Fund: Bernard German, bacteriology; Nathan B. Kornetsk, physiology; Stanley M. Levenson, public health; Edward Mellman, biochemistry; John Holmes Dingle, surgery.

Louis E. Kirstein Fellowship: Louis H. Nason, surgery.

William O. Moseley Jr. traveling fellowship for study in Europe: Dale Gilbert Friend, biochemistry; Rolf Lium, surgery; John Burton Dynes, psychiatry.

Francis Weld Peabody Memorial Fellowship for intensive clinical and laboratory studies: Arnold F. Meiklejohn, medicine.

Jeffrey Richardson Fellowship for continuation of studies either here or abroad: Lewis Dexter, medicine.

The Whitman Fund, for pursuing the study of medicine or surgery at the Ecole de médecin de Paris: John Burton Dynes, psychiatry.

Dr. William Hunter Workman Scholarship to enable graduates of Harvard Medical School to pursue postgraduate studies in medicine in this country or abroad: Robert P. Tucker, biochemistry.

North Dakota Personal

Dr. Russell A. Nelson, Minot, N. D., a graduate of Johns Hopkins University School of Medicine in 1937, has been appointed assistant resident physician at Johns Hopkins Hospital, Baltimore, and assistant instructor in medicine at Johns Hopkins University.

The Holden Trust Fund at Western Reserve University

Western Reserve University, Cleveland, came into possession of the principal of the Albert Fairchild Holden Trust Fund August 25, which was the twenty-fifth anniversary of the death of Liberty E. Holden, who established the foundation as a memorial to his son. The fund, which is said to be worth at least a million and a half dollars, will continue to be used, as directed by Mr. Holden, for lectures and research in the School of Medicine.